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VIRGINIA'S MARINE WATERS AND FISHERIES



series of natural phenomena have combined off the Virginia coast to create some of the richest marine waters in the world. The bounty of these waters is

readily apparent to recreational fishermen who pursue a seemingly endless variety of finfish species.

The Chesapeake Bay and its great tidal rivers join to form the largest and most productive estuarine complex in North America. They supply a vast amount of nutrients into coastal waters and provide a huge spawning and nursery area for many species of fish.

The warm waters of the Gulf Stream flow north along the East Coast until they collide with the cool, plankton-rich waters of the Labrador Current flowing south. The intermixing of these currents occurs near Cape Hatteras, North Carolina, and in adjacent waters. This puts the southern coast of Virginia in the dynamic area where the Mid-Atlantic Bight and South Atlantic Bight are joined, and brings a huge mix of finfish species into local waters. In fact, Virginia is the southernmost range of real abundance for many temperate species of fish and the northern range of abundance for many subtropical species.

The large peninsula which forms the Eastern Shore of Virginia is flanked by a chain of uninhabited and unspoiled barrier islands. These islands protect a rich complex of marshes, bays and sounds which provide a haven for a variety of marine life.

THE CHESAPEAKE BAY

The main portion of the Chesapeake Bay follows the ancient bed of the Susquehanna River. Dramatic forces during the Ice Age, which helped shape the Susquehanna Valley, and the rising ocean waters caused by the melting ice cap as the Ice Age ended, transformed the southern portion of this river valley into the vast estuarine complex that today is the Chesapeake Bay.

The Chesapeake Bay continues as the place where several of the great rivers in the eastern United States meet the ocean. The Susquehanna River has the greatest impact on the Bay contributing, on average, almost 50% of the freshwater flowing into the Bay. The Potomac and the James Rivers provide more than 15% each, leaving under 20% for the combined inflows from more than a dozen other rivers including the Rappahannock, York, Chester, Choptank and Nanticoke.

Water also flows into the Chesapeake Bay from the ocean. A relatively constant inward flow of ocean water occurs along the bottom at the mouth of the Chesapeake Bay. These ocean waters, laden with salts and minerals, are heavier and more dense than the freshwaters flowing from the rivers into the Bay and out its mouth in the upper portions of the water column. This pattern of water circulation, with heavier saltwaters

flowing into the Bay along the bottom while lighter freshwaters flow out near the surface, was documented in a scientific study by the Virginia Institute of Marine Science.

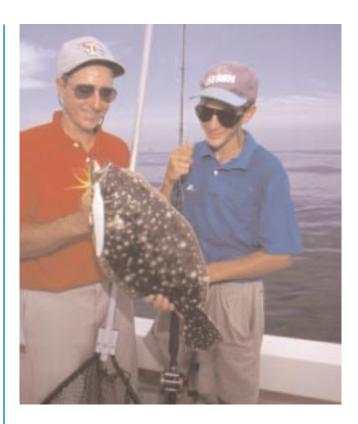
The mixing of ocean and rivers waters in the Chesapeake Bay produces waters which are variably salty and fresh, often changing based upon short term weather phenomena, long term weather or climatic patterns, tides,

Many anglers believe the Gulfstream waters harbor the most magnificent game fish found anywhere in the world. For a combination of power, speed and "grayhounding" jumps, no fish in the ocean can match the magnificent blue marlin. depth and location. However, certain patterns remain constant. Bay waters along the eastern side of the Bay are saltier than waters along the western shore. This is due in large measure to the large inflows of freshwater from the western rivers and a phenomenon called the coriolis effect – a result of the rotation of the earth.

Tides, which are caused by the rise and fall of ocean waters due primarily to the gravitational forces of the moon and the sun, cause variations in salinity. During high or rising tides salinities increase in the Bay and move further up the Bay, while the opposite occurs on low or falling tides. Since tidal movement originates at the mouth of the Bay (tides are the rise and fall of ocean waters), the times of the peak high and low tides vary by location. The "wave" of tidal flow starts at the mouth of the Bay and must physically move to its upper reaches and up its tributary rivers. This takes time and the difference between the time of the high tide at places near the mouth of the Bay and others farther up the Bay or in the tidal portion of its tributary rivers can vary by as much as 4 - 6 hours.

Forces with seemingly little connection to the Chesapeake Bay can have major impacts on salinity levels. For example, heavy rains in western Virginia, Maryland and Pennsylvania mountains may create flash floods which can send pulses of freshwater down major rivers. These pulses are called "freshets" as they reach the brackish waters of the rivers near the Chesapeake Bay, and these sudden changes in salinity can have pronounced impacts upon marine life. In fact, the torrential rains in Pennsylvania during Hurricane Agnes in 1972, creating epic floods from the Susquehanna River, had catastrophic effects on the Chesapeake Bay. In fact, Agnes may have been the "trigger" mechanism for the disappearance of vast areas of underwater sea grasses in the Bay. Unfortunately, the sea grasses have not been able to recover, probably due to the combination of pollution, excess nutrients and turbidity associated with water quality problems.

Changing salinty levels are not the only dynamic forces impacting the Bay environment. Water temperatures vary dramatically on an annual basis. The water temperatures found in the Chesapeake Bay probably have the highest average annual variance of any location on the East Coast. Winter often produces skim ice and even harder freezes on the lower Bay tributary rivers, and several times in this century portions of the main stem of the Chesapeake Bay have been covered with ice. Summertime surface water temperatures in shallow bays may approach, or exceed, 90 degrees. Sudden changes in temperature, which may occur during extended cold snaps in the fall or early winter, can cause water temperatures to drop dra-



matically resulting in severe stress to fish and other marine life.

Even events outside of the Bay can impact its water temperature regimen. Heavy snowfall early in the fall in the Blue Ridge mountains can result in a drastic lowering of the water temperatures in the tributary rivers running to the Bay. As these rivers feed into the Bay, the water temperature can be lowered rapidly with often severe impacts on marine life.

For these reasons, the marine life found in the Chesapeake Bay is among the hardiest and most adaptable found anywhere in the world.

While life in these dynamic surroundings is not easy, estuarine environments are extraordinary in their richness and diversity of life. Most of the commercially and recreationally important finfish species of Virgnia spend a portion of their lives in an estuarine environment.

Estuarine communities begin with intertidal salt marshes. These low areas, characterized by muddy tidal flats, spartina grasses, and small creeks, are nature's "buffer" zones. They provide

filtering areas that trap nutrients and, in recent years, pollutants, preventing them from overburdening the tidal rivers and bays. The tidal marshes are teeming with life from the everpre-

sent snails, fiddler crabs and worms to shrimps, "fundulus" minnows, blue crabs and juvenile fish.

Unfortunately, intertidal salt marshes and wetlands have been disappearing in modern times due to the increasing pressure to



develop waterfront properties caused by the desire of more people to live near the coast. While this trend continues, the rate at which marshes and wetlands have been declining is slowing, as regulations have focused efforts on environmentally "friendly" development which provides protection for these critical and sensitive areas. Increased protection of tidal marshes and wetlands is a key component in maintaining the water quality of the Chesapeake Bay and preserving much of its marine life.

Sea grasses, mainly eelgrass, thrives in shallow waters, often growing best in waters that are somewhat protected from excessive wave and current movements. They provide protection for many small fish and molting blue crabs, making this habitat attractive for numerous game fish.

In addition, sea grass beds serve a filtering role, helping sediments to trickle to the bottom which produces better water clarity. Sea grass beds dissipate wave energy, which helps to reduce shoreline erosion and improves water clarity. Ironically, many scientists believe excessive runoffs, a form of non-point source pollution which causes increased water turbidity, was responsible for killing many sea grass beds in the Chesapeake Bay during the 1970's, probably triggered by the torrential rains and massive floods associated with Hurricane Agnes in 1972. Thus, while sea

grasses are important in preserving and improving water quality, it may have been poor water quality which killed massive sea grass beds 30 years ago.

During the last fifteen years, however, the Chesapeake Bay clean-up initiatives have focused on controlling agricultural and urban runoff, and sea grass beds are starting to make comebacks. In many ways the health of sea grass beds may be a good measure of the health of the Bay, since sea grasses require good water quality, low in suspended sedimentary runoff, nutrients, pollutants and phytoplankton, to thrive.

Oyster rocks and bars are the major types of natural "reef communities" in the Chesapeake Bay. A host of small invertebrates are attracted to the oyster rocks and contribute to the food chain. In turn, these "live bottom" areas attract a host of small finfish, which are sought out by even larger game fish.

Oysters are filter feeders, straining small plankton and nutrients from the water column, which is an important component of maintaining the Chesapeake Bay's water quality. At the start of the 20th century oyster rocks rising ten feet off the bottom were not uncommon. Oysters were so numerous they were thought to be able to filter an amount of water equivalent in volume to the entire Chesapeake Bay in less than a week. Disease, pollution and overharvesting have reduced oyster populations to a fraction of that level, and today's population of oysters would take nearly a year to filter the water volume of the Chesapeake Bay. Rebuilding the oyster population is a major priority of fishery managers in Virginia.

Another concern in recent years has been a declining trend in some of the prime forage fish, especially menhaden and bay anchovies, in the Chesapeake Bay. Menhaden are the other major filter feeder associated with the Bay, thus serving a dual role as forage for many important recreation fish and a component in the Bay water quality equation. Observers are unsure whether this decline is a short term phenomenon or a longer term problem, but efforts are being mobilized to investigate this issue.

The Chesapeake Bay offers a tremendous variety of recreational fishing opportunities, but no fish is more symbolic of the Bay than the striped bass.

The Chesapeake Bay is the largest spawning and nursery area for striped bass on the East Coast. As much as 80% of the coastwide migratory population is thought to be native to the Bay.

Striped bass, like shad and herring, are anadromous; this means they spend the majority of their lives in saltwater but return to freshwater rivers to spawn. They can be caught in virtually every portion of the

Chesapeake Bay and its tributary rivers. In addition, stripers can be found at some place in the Bay every day of the year. The resurgence of striped bass populations in recent years from the population collapse in the 1970's, which nearly culminated in their listing as a threatened species, is one of the spectacular success stories of modern fisheries management.

Striped bass provide just one of several opportunities for small boat fishermen to do battle with adversaries which may weigh 50 pounds or more. In addition, the Bay offers seasonal runs of cobia, red drum and black drum. Red drum and black drum appear in Bay waters in mid-April, while cobia usually appear on the Memorial Day weekend.

The reappearance of seagrass beds in several locations in the Bay may be the reason speckled



trout populations have grown in recent years. Since the late 1980's, speckled trout populations have been increasing, and the favorite haunts of this popular game fish are shallow water flats with abundant seagrass beds.

The Chesapeake Bay is a summertime home for many species of "panfish". Summer flounder, croaker, spot, and small gray trout are the favorite targets for many anglers bouncing baits along the bottom. Spanish mackerel and small bluefish can be taken by a variety of methods using artificial lures and bait, and in recent years anglers have started to learn the methods which are productive for catching the visiting populations of spadefish and

sheepshead. The reappearance of some larger gray trout is welcome news for recreational fishermen approaching the new millenium and is another example of the positive contributions of serious fisheries management.

Tautog can be found over wrecks and obstructions in the lower Chesapeake Bay all year but are most active when the water is cool. They remain active throughout the winter, as long as water temperatures remain in the low 40's, or higher. Black sea bass can be found in the same areas from late spring through the fall.

COASTAL WATERS

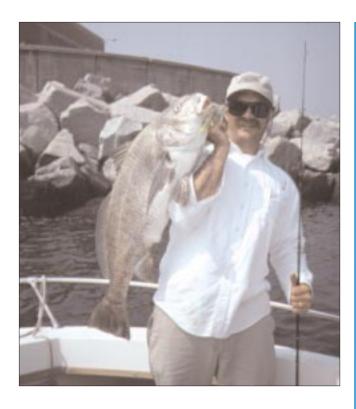
The coastal waters off Virginia are a part of the Mid-Atlantic Bight, which begins at Cape Hatteras, NC and extends well into New England. The waters in this area are classified as temperate, which means they enjoy a moderate temperature regimen, neither hot nor cold. This does not necessarily mean the waters are always hospitable for marine fish, however, since temperate waters are marked with a wide variance of water temperatures during the course of a year.

The surface water temperature off the Virginia coast, as measured at the Chesapeake Light Tower during the thirty year period of 1961-1990 showed an average annual temperature range of approximately 45 degrees. In the winter, the water temperature often fell to 36 degrees and often reached 81 degrees in the middle of the summer. During that 30 year period the temperature extremes recorded were 33 degrees for a low and 83 degrees for the high – a range of 50 degrees.

The impacts of such a wide temperature range on fish are profound. Temperatures at the warm and cold extremes of the range are not suitable for many species. The result is a transient population of marine fish in the coastal zone, with most species of fish migrating into and out of the area seasonally, depending upon their preference for warm or cool water. Those species which remain in waters of the Mid-Atlantic Bight year round may move to deeper waters to winter, where they often exhibit sluggish behavior characterized by reduced feeding activity.

Other forms of marine life also are impacted by the wide annual variance in water temperature. Plankton thrives in the late spring, summer and early fall, but is conspicuously absent in the winter months. The result is a breakdown in the food chain, resulting in fewer available food supplies for fish that do not migrate.

The relatively flat, featureless sand bottom that lies under the surface of most coastal waters off Virginia is not the type of environment preferred by most fish. Natural



"live bottom" areas, such as the coral reefs often found in southern waters and rock outcroppings of northern waters, are few in this region.

The natural structures in coastal waters which are attractive to fish are underwater hills and lumps, such as the Southeast Lumps, the 26 Mile Hill and the Cigar. However, the most preferred bottom structures in local waters may have been produced by man. The coastal bottom is littered with the sunken hulks of vessels torpedoed by the German Navy's U-boats during World War II, and an active artificial reef program continues to sink habitat for fish. These artificial reefs harbor fish year round, including the best fishing for tautog and sea bass on the East Coast.

The coastal zone might best be described as a giant migratory corridor, which is a function it performs for a tremendously diverse mix of finfish species. For the most part, fishermen are attempting to intercept these interlopers as they head toward their ultimate destinations.

The coastal waters from Cape Hatteras to the mouth of the Chesapeake Bay are where the Mid-Atlantic Bight joins the South Atlantic Bight, and fish indigenous to both areas mingle seasonally. The warm Gulf Stream current mixes with the cold Labrador Current over the edge of the Continental Shelf, and many species ride these waters into this "mixing bowl". This is the reason anglers in this area are provided with a myriad of fishing opportunities.

Some of the warm water species migrating to coastal waters during the summer months

include amberjack, cobia, king mackerel, Spanish mackerel, crevalle jack, spadefish, and even a few tarpon and barracuda. Species which move to northern waters during the heat of the summer, but are present in the spring and the fall include striped bass, bluefish, bluefin tuna, bonita, and little tunny.

The surf zone and near shore waters host a variety of feisty, and tasty, game fish, including flounder, bluefish, speckled trout, gray trout, red drum, Spanish mackerel, striped bass, kingfish (roundheads), croaker, spot, and pompano. Many of these species are most abundant in the late spring or the early fall as they are migrating to their summer and winter haunts. A particularly good time to find large numbers of fish moving through near shore waters is after cold fronts and storms in the early fall, which sparks the urge for many species to school and begin their migrations south.

OFFSHORE WATERS

The western edge of the Gulf Stream current brings warm, tropical waters into the mid-Atlantic region. The Gulf Stream comes closest to the coast of the United States off southern Florida, but the eastward protrusion of Cape Hatteras into the Atlantic causes the Gulf Stream to pass within 25-30 miles of the coast at this point. The warm current then begins to veer to the northeast as it mixes with the Labrador Current. The western edge passes off the Virginia coast along the edge of the 100 Fathom Curve, which is 55-65 miles offshore.

These indigo blue waters are incredibly rich with life, from the blooms of small plankton and invertebrates often associated with lines of drifting Sargassum weed to magnificent blue marlin. The ocean bottom in the area of the 100 Fathom Curve provides the best natural structure in ocean waters off the Virginia coast. Here, the Continental Shelf ends and water depths plummet. Sheer rock walls, rock outcropppings and mounds abound on the bottom. In the space of a few miles, water depths tumble from 100 fathoms to over 2000 fathoms. The Norfolk and Washington Canyons are two areas where deep waters intrude well westward into the Continental Shelf.

The sharply changing terrain of the bottom causes subsurface currents to veer toward the surface, creating "upwellings" of cooler water, which push nutrients to the surface. Swirling eddies of warm water break off the Gulf Stream

and often head west onto the Continental Shelf. Cool water eddies also invade shelf waters from the southern moving Labrador Current. These types of actions cause sharp



water temperature changes to occur at the surface and bring nutrients into areas attracting a myriad of marine life including game fish.

Many anglers believe the Gulfstream waters harbor the most magnificent game fish found anywhere in the world. For a combination of power, speed and "grayhounding" jumps, no fish in the ocean can match the magnificent blue marlin. Reaching sizes in excess of 1000 pounds, the blue marlin is considered the ultimate test of angling skill and sheer endurance. Its smaller cousin, the white marlin, is the most acrobatic of the billfish and can be particularly tough for anglers to hook. Both species are readily available off the Virginia coast, and in the late summer and early fall some of the best fishing for white marlin in the world occurs off Virginia.

Three additional members of the billfish family are regularly encountered off the Virginia coast, although none can be considered abundant. Sailfish and spearfish regularly surprise anglers trolling for their larger and more abundant cousins, and anglers fishing in the offshore canyons at night during the latter part of the summer have the chance to hook a swordfish.

The wahoo has the reputation as the fastest game fish in the ocean, and the dolphin, with its dazzling blue, green and yellow coloration, is among the most beautiful. Both are plentiful off the Virginia coast, particularly around floating structure such as boards, pallets and other "flot-sam", and around concentrations or "lines" of Sargassum weed. Wahoo are particularly abundant in September and early October.

The tunas are well represented in Gulfstream waters, with yellowfin tuna and bigeye tuna the most abundant and most sought after by local charterboat fleets.

Schools of albacore, blackfin tuna and skipjack tuna also are occasionally encountered.

The area on the fringes of the Gulf Stream, which is teeming with life, is a prime location to find the ocean's top predator — the shark. Great hammerhead sharks often can be seen swimming near the surface in the ocean canyons, but seldom attack a trolled bait. Blue sharks are most numerous in offshore waters, but the mako shark is the predator most prized by recreational fishermen. The mako is noted for its blistering speed, twisting jumps, and quality on the dinner table. The spring and early summer is the time to find mako sharks off the Virginia coast, since they prefer cooler waters and often follow schools of bluefish and tuna on their northern migrations.

EASTERN SHORE BARRIER ISLANDS

Virginia's Eastern Shore, a peninsula which begins at the border between Virginia and Maryland and extends to the mouth of the Chesapeake Bay, is flanked on the east by a stretch of uninhabited barrier islands. Between the barrier islands and the mainland is a network of shallow bays, channels, and saltwater marshlands, which are among the richest and most productive remaining on the Atlantic coast. This barrier island complex, which includes more than 70 miles of coastline, is the longest stretch of natural beach remaining on the East Coast.

The barrier islands are narrow strips of sand which are frequently overwashed by high tides and storms. The winds and surging waters associated with coastal storms are constantly reshaping the islands. New inlets form as old ones close, marshes are covered as portions of the islands move to the west, and the shape of the beach changes as new points, sloughs and sandbars are formed. The dynamic nature of these islands is the primary reason permanent settlement by man is impractical, and why these islands remain in a natural state.

The islands provide the mainland with protection from the devastating impacts of coastal storms, particularly northeasters and hurricanes. The primary energy of the tides and waves is absorbed by the islands, buffering the mainland from the severest forces of erosion.

The islands are a nesting sanctuary for at least 23 species of colonial nesting birds, including the extremely rare piping plover. They also provide resting and feeding areas for many other species of migratory shorebirds,

songbirds, raptors, and waterfowl.

The marshlands behind the barrier islands function in the same manner as the

marshes of the Chesapeake Bay. They provide a "buffer" zone for run-offs coming



from the mainland. Sediments, nutrients and pollutants are trapped in the marshes, and organic material is slowly released into the water. This provides an indispensable source of nutrients to this estuarine system, while maintaining water quality by preventing too many nutrients, sediments or pollutants from entering the system at one time.

The nutrients provide a source of food for a variety of marine life, including juvenile fish and shellfish and make this area a major nursery ground for several species of fish. The richness of the waters also attracts a variety of game fish.

However, even the seaside bays and marshes, in their relatively undisturbed condition with some of the best water quality remaining on the Atlantic coast, have not escaped the infirmities which have affected most coastal areas. Run-off from the mainland occasionally enters the seaside marshes in quantities that overburden the system with sediment and contaminants. Submerged sea grass beds, which were abundant in many seaside waters at the start of the twentieth century, disappeared in the 1930's and have shown no sign of returning. Oysters and oyster rocks provided natural "reef communities" in many places along the seaside in years past, but only a fraction of the oyster population remains today.

Even so, seaside waters offer a variety of fishing opportunities. The summer flounder is the undisputed king for recreational fishermen. They are abundant from April through September in virtually every inlet, bay and channel behind the barrier islands.

Seaside waters also harbor good populations of gray trout (weakfish), black drum, red drum, bluefish, croaker, spot, kingfish (roundheads), and Spanish mackerel. The only viable recreational fishery for tarpon in Virginia occurs in the "back country" marshes of the southern portion of the seaside.

The relatively protected waters behind the barrier islands make this an ideal place for anglers with small boats to fish. Access is easy with most seaside communities providing excellent launching facilities.

Surf fishing can be superb on the barrier island beaches, highlighted by the fall fishery for big red drum. Bluefish, striped bass, gray trout, flounder, kingfish, croaker, and spot roam the beaches seasonally.

Assateague Island, the northernmost barrier island, is a part of the National Seashore system operated by the National Park Service. A causeway provides access for surf fishermen, who can park at numerous areas along a road that runs behind the oceanfront dunes. Four-wheel-drive vehicles are allowed to drive on designated portions of the beach at certain times of the year. Information about usage of the beach may be obtained from Assateague Island National Seashore, P.O. Box 38, Chincoteague, VA 23336, (757) 336-6577.

Most of the remainder of the barrier islands and some of the marshland are owned by the Nature Conservancy, which insures these areas will be protected in their natural state. The only access available to these islands is by boat from the mainland, then a walk down the beach to a favorable spot for surf fishing.

The Virginia Coast Reserve, the program of the Nature Conservancy that administers the barrier islands preserve, has specific policies regarding the public use of these lands. Most of the barrier islands are open to the public for day use, including such activities as surf fishing, hiking, swimming, birdwatching, picnicing, and photography. Ship Shoal, Little Cobb, and Revel's Islands are not open for public use. Visitors are requested not to disturb nesting birds and bird colonies,

research sites and the natural qualities of the islands. Certain activities are not permitted, such as fires, overnight camping, pets, and motorized vehicles. Information about the

Virginia Coast Reserve, including membership options for this conservation group and policies on usage of the barrier islands, can be obtained from the Virginia Coast Reserve, Brownsville, Nassawadox, VA 23413, (757) 442-3049.



How, When & Where to Catch



Virginia's Saltwater Fishing Calender

x - Available xx - Peak Season

		/			/		/	/	/		/	/
Species	Samar.	4 officer	March	Mar.	quo?	Tane	July	Autori	2 contraction of the second	october October	Addentife	T Too The state of
Amberjack						x	ХX	XX	xx	x		
Atlantic Mackerel		x	xx	x								
Black Drum				x	xx	xx	x	x	x			
Blue Marlin						x	xx	xx	xx	x		
Bluefin Tuna						xx	xx	xx	x		x	x
Bluefish				x	xx	ХX	xx	XX	xx	xx	xx	ж
Cobia					ж	ХX	xx	ж	xx			
Croaker				x	x	xx	xx	xx	xx	x		
Dolphin					x	x	xx	xx	xx	x		
Flounder			ж	xx	xx	ХX	xx	xx	xx	xx	ж	
Gray Trout				ж	xx	ХX	xx	ж	xx	xx	ж	
King Mackerel						x	xx	xx	xx	xx		
Kingfish (Roundhead)					x	xx	xx	xx	xx	x		
Red Drum			x	x	xx	xx	x	xx	xx	xx	x	
Sea Bass	x		x	x	xx	xx	xx	xx	xx	xx	xx	xx
Sheepshead					x	xx	xx	xx	х	x		
Spadefish					x	xx	xx	xx	xx	x		
Spanish Mackerel						xx	xx	xx	xx	x		
Speckled Trout				ж	xx	ХX	ж	xx	xx	xx	xx	ж
Spot						x	xx	xx	ХX	x		
Striped Bass	xx	x	x	x	x	ХХ	x	x	ХX	xx	xx	xx
Tarpon						ж	xx	xx	x			
Tautog	xx	x	xx	xx	xx	ХX	ж	ж	x	xx	xx	xx
Wahoo						ж	ж	xx	ХX	xx		
White Marlin						ж	xx	xx	xx	x		
Yellowfin Tuna					x	XX	XX	XX	XX	XX		

Note: Chart shows availability of fish in local waters; fishery regulations may establish varying open and closed seasons.

Species	Bait or Lure	Method	Location	Seasons	Average Weights	State Record
Amberjack	Live bait (spot, croaker, bluefish, menhaden, small fish); Artificial lures (spoons, surface plugs, diamond jigs, white bucktails, plastic squids)	Drifting and slow trolling live bait over and around obstructions (wrecks, reefs, towers, buoys); casting and trolling artificial lures over and around obstructions	Ocean waters over and around wrecks & underwater obstructions; Chesapeake Light Tower	June — October; peak July — middle September	30 - 60 pounds	118 pounds; caught at the Chesapeake Light Tower in 1986 by Mark J. Roberts
Black Sea Bass	Squid, crab, cut fish, clam, shrimp, diamond jigs, metal jigs	Bottomfishing, generally near and over underwater obstructions (wrecks, reefs, rocks and rough bottom areas)	Ocean waters; species less plentiful (especially large individuals) in lower Chesapeake Bay	April — December; species moves to waters offshore (20 fathoms and more) during winter, where they can be caught over wrecks and ledges	1 - 3-1/2 pounds	10 lbs., 4 oz; caught over offshore wreck by Al Paschall in 2000
Bluefish (large)	Artificial lures (spoons, tube eels, metal squids, surface plugs), cut bait (fresh menhaden, mullet, herring, spot), whole balao or Boston mackerel	Trolling, casting or jigging to schools of fish with artificial lures; surfcasting with cut bait or lures; chumming while using cut bait; bluefish can be taken on streamer flies with a fly rod	Offshore and coastal waters; Chesapeake Bay; Eastern Shore barrier island surf	Middle April — July; October — December	8 - 16 pounds	25 lbs., 4 oz.; caught at Bluefish Rock in Chesapeake Bay in 1986 by Gayle E. Cozzens
Bluefish (small)	Artificial lures (small spoons, feather lures, metal squids, surface plugs) and cut bait	Trolling or casting to schools of fish with artificial lures; surfcasting and bottom fishing with cut bait; surfcasting with artificial lures	Chesapeake Bay, coastal ocean waters, ocean surf, inlets	May — October	1 - 5 pounds	
Cobia	Live bait (eels, spot, menhaden, mullet); artificial lures (large spoons, white bucktails, plastic eels, swimming plugs); cut bait (menhaden or spot)	Cast, drift or slow troll live baits around buoys, underwater obstructions and schools of fish swimming on the surface; anchor, chum and fish live baits, fresh dead baits and cut bait in chum slick and on bottom; cast and troll lures around buoys, obstructions and to schools of bullfish (rays) or schools, pods or individual cobia swimming on surface	Buoys in lower Chesapeake Bay, at the mouth of the Bay and along coastal beaches; CBBT; Bluefish Rock off Hampton, Cabbage Patch and Kiptopeake areas off Cape Charles, and Your Spit area; coastal buoys and wrecks; Chesapeake Light Tower; Latimer Shoal; Inner Middle Ground Shoal; York Spit area	May — September; peak mid-June — mid - September	20 - 50 pounds	103 lbs., 8 oz., caught off Mobjack Bay in 1980 by Edward K. Brown
Croaker	Peeler crab, bloodworms, cut bait, squid, shrimp	Bottomfishing with bait, anchored or drifting from boats, and also caught from piers, docks, shore and surf	Chesapeake Bay, tributary rivers of the Bay, coastal ocean waters, inlets,	April — October	1/2 - 2 pounds	5 lbs., 13 oz.; caught at the Cell in Chesapeake Bay in 1982 by Jim Mitchem
Dolphin	Artificial lures (offshore trolling lures), balao, squid, cut bait	Trolling with lures, balao and squid; casting to schools of dolphin around weedlines and floating debris with cut bait (fish or squid) and lures (bucktails, surface plugs, streamer flies)	Offshore ocean waters	May — October	2 - 20 pounds	71 lbs., 8 oz.; caught off VA Beach in 1991 by Don Dorey
Black Drum	Whole clam, peeler crab, whelk, peeler crab/clam "sandwich", bucktail and leadhead jigs	Bottomfishing with bait on "fishfinder" rig; running tides and late afternoons and evenings considered best; occasionally caught on bucktails or metal squids by casting or jigging to a school of fish	Chesapeake Bay along shallow portion of channel ledge running from Fisherman's Island to north of Cape Charles, especially off Kiptopeake, at Cabbage Patch and buoys C-10 & C-12; around middleground bars of Eastern Shore seaside inlets; 2nd & 3rd Islands of Chesapeake Bay Bridge Tunnel	May — September; peak May — early June along Eastern Shore bayside and seaside inlets; peak late June— early August at 2nd & 3rd Islands of Chesapeake Bay Bridge Tunnel	40 - 60 pounds	111 pounds; caught off Cape Charles in 1973 by Betty Hall
Red Drum	Cut bait (fresh mullet, spot, menhaden), peeler crabs, artificial lures (spoons, large plugs, jigs)	Bottomfishing with bait on "fishfinder" rig; trolling and casting spoons, plugs and jigs	Shoal areas at the mouth of Chesapeake Bay, especially Inner Middle Ground Shoal and Latimer Shoal; Eastern Shore Bayside channel edge form Kiptopeake to Buoy 42-A; Parker's Island and flats north of Parker's Island off Onancock; surfcasting the Eastern Shore barrier island beaches; trolling and casting lures in Smith Island Inlet area Rudee and Lynnhaven Inlets for small fish.	May — early July on shoal at mouth of the Chesapeake Bay; August — September along Eastern Shore bayside channel edge; May and early June around Parker's Island; mid- May — June and mid-September — October for surfcasting; late April — May in Smith Island Inlet March · June in Rudee Inlet.	30 - 50 pounds	85 lbs., 4 oz.; caught at Wreck Island on Eastern Shore seaside in 1981 by Herman Moore
Flounder	Live bait (minnows and small fish), frozen minnows, fresh strip baits (bluefish, flounder and shark belly, squid), minnow/strip combination, artificial lures (bucktails); big strip baits and live spot or small mullet often used for big fish at Chesa- peake Bay Bridge Tunnel	Drift fishing with live or dead natural baits fished on the bottom; slow trolling natural baits on bottom; casting from beaches and piers; trolling small buck- tails dressed with strip baits (especially for big fish along Chesapeake Bay Bridge Tunnel); casting bucktails	Seaside inlets of the Eastern Shore; Chesapeake Bay Bridge Tunnel area; lower Chesapeake Bay; Rudee Inlet; the Cell and eastern end of the "Cut" Channel in the middle Chesapeake Bay	March — November; peak May — July on Eastern Shore seaside; July — October in Chesapeake Bay	1 - 3 pounds	17 lbs., 8 oz.; caught at Chesapeake Bay Bridge Tunnel in 1971 by C.E. Cross
Kingfish (Roundhead, Whiting)	Bloodworms, shrimp, small pieces of cut bait, squid, sand fleas	Bottomfishing with bait	Surf zone of coastal waters from Sand- bridge to Assateague Island; ocean piers; lower portion of the Chesapeake Bay, including lower bay piers	May — October	1/2 - 1-1/2 pounds	2 lbs., 9 oz.; caught in Cape Charles Harbor by Kevin Logan in 1998
Mackerel, Atlantic (Boston Mackerel)	Small tube worms and jigs	Jigging to schools of suspended fish	Coastal and offshore ocean waters, from 5-35 miles offshore	Mid - February – mid April peak March — early April	1/2 - 3 pounds	None; 3 pound minimum for initial state record
Mackerel, King	Live bait (menhaden, mullet, spot, small bluefish); artificial lures (spoons, feather lures, nylon jigs); strip baits and small whole balao	Slow trolling, drifting or anchoring with live bait; trolling with artificial lures, strip bait and balao	Coastal and offshore ocean waters, particularly around wrecks, towers, obstructions, ledges, lumps and other "structure"; mouth of the Chesapeake Bay and off ocean inlets	June — October; peak September — middle October	5 - 20 pounds	52 lbs., 2 oz.; caught on Sandbridge Fishing Pier by Andrew John Allessio in 1999
Mackerel, Spanish	Small artificial lures (spoons, metal lures, feather and nylon lures), small live baits (menhaden, mullet)	Trolling; casting to schools of fish	Coastal ocean waters, particularly off inlets, along tidelines, and over coastal wrecks; lower Chesapeake Bay	June — October; peak June — September	1 - 3 pounds	9 lbs. 13 oz; caught off Virginia Beach in 1993 by Everett Cameron
Blue Mariin	Whole dead fish (balao, mullets, spanish mackerel), squid, artificial lures (offshore trolling lures), and live baits (small dolphin, bonito and skipjack tuna)	Trolling	Offshore ocean waters	June — October; peak middle June — September	150 - 400 pounds	1093 lbs., 12 oz., caught off Virginia Beach in 1978 by Edward A. Givens

Species	Bait or Lure	Method	Location	Seasons	Average Weights	State Record
White Marlin	Whole dead fish (balao,	Trolling; occasionally casting live baits	Offshore ocean waters	June — October; peak	40 - 60 pounds	131 lbs., 10 oz.; caught off
	mullet), squid, strip baits, eels, artificial lures (offshore trolling lures), live bait (pilchards, cigar minnows)	to marlin "balling" bait or swimming on surface		August — September	·	Virginia Beach in 1978 by Rudolph D. Van't Riet
Sailfish	Whole dead fish (balao, small mullet), strip baits, squid, arti- ficial lures (small offshore troll- ing lures, live bait (small fish)	Trolling: also, sailfish seem to be attracted to slow trolled live baits fished in similar method as used to slow troll for king mackerel	Offshore ocean waters	June — October; peak July — September	20 - 40 pounds	68 lbs., 8 oz.; caught off Virginia Beach in 1977 by P.J. Murden
Sharks	Whole dead fish and cut fish; live bait (fish)	Anchor, chum and fish dead and live fish baits in chum slick and on bottom	Offshore and coastal ocean waters, particularly around and over obstructions (wrecks, reefs, towers), ledges and lumps; Eastern Shore seaside coastal waters and inlets	June — October	50 - 250 pounds	1099 lbs., 12 oz.; caught off Virginia Beach in 1981 by John Thurston
Sheepshead	Fiddler crabs, mole crabs (snad fleas), clams	Fishing bait near the bottom (suspended off the bottm) near submerged structures	Chesapeake Bay Bridge Tunnel; wrecks in nearshore coastal waters and lower Chesapeake Bay	May — October	3 - 8 pounds	19lbs.; caught at Chesapeake Bay Bridge Tunnel by James M. Boyd in 1979
Spadefish	Pieces of fresh mussels and clams; pieces of jellyfish	Fish visible schools of fish around obstructions (buoys, towers, etc.) with small (#1 or #2) double strength hooks	Coastal ocean waters and the lower Chesapeake Bay; Fish consistently found at the Cell, Plantation Light, York Spit Light, Tiger wreck, 4A-buoy, Chesapeake Light Tower, and CBBT	May — September	3 - 8 pounds	13 lbs.; caught at the Cell in 1988 by Otis Tribble
Spot	Bloodworms, peeler crab, clam	Bottomfishing with bait; anchored or drifting from boats, also caught from docks, piers, shore and surf; big runs of fish in the fall in lower Chesapeake Bay and in surf and piers of Virginia Beach	Chesapeake Bay and Bay tributary rivers, coastal ocean waters, inlets — all inshore coastal waters	June — October; peak July — September for Chesapeake Bay and tributary rivers; peak middle August - middle October in lower Bay and coastal ocean areas	8 - 12 ounces	2 lbs., 6 oz.; caught at the Egg Island Bar in Chesapeake Bay in 1980 by Nathan Dryden
Striped Bass	Artificial lures (spoons, plastic eels, bucktails, surface plugs, swimming plugs), peeler crab, bloodworms, eels, cut bait, live bait	Troll artificial lures around bridges, piers, Chesapeake Bay Bridge Tunnel, jetties or troll in vicinity of schools of fish (where gulls diving and slicks on the water); cast bucktails and plugs around bridges, piers, jetties and CBBT; bottomfishing with bloodworms in deep holes, creeks and rivers that flow into Chesapeake Bay during winter months and in Assateague surf during late fall and early spring; peeler crab baits fished in tributary rivers and creeks near shore during summer	All coastal inshore and Chesapeake Bay waters (tidal waters, including Bay tributary rivers and Eastern Shore bayside creeks); best concentrations of fish in main portion of Chesapeake Bay and around Chesapeake Bay Bridge Tunnel; large fish most often found along CBBT, main portion of Chesapeake Bay and off the Virginia Capes at the mouth of the Bay; Assateague surf in late fall and early spring	January — December; peak for large fish in November and December; peak fishing for school fish generally in spring and fall	5 – 25 pounds	61 lbs., 12 oz.; caught at Buoy 42 in the Chesapeake Bay in 1996 by James R. Muse
Swordfish	Whole dead squid and fish	Fish at night from a drifting boat using natural baits with chemical lightsticks, with baits weighted to maintain specific depths	Offshore ocean waters	April — October; peak August — September		381 lbs., 8 oz.; caught at the Norfolk Canyon in 1978 by J.D. Alexander
Tarpon	Whole dead fish (spot, croaker, menhaden); live bait (spot, croaker, menhaden, mullet); whole squid; artificial lures (plugs and weighted streamer flies)	Anchor and fish live bait under floats, fish dead bait on the bottom and at various depths; cast artificial lures to rolling fish	Inlets, interior marsh areas, and ocean waters along the beaches of Eastern Shore seaside barrier islands; fish deep holes on low tides and shallow areas on high tides	Late June early September; peak July — August	40 - 80 pounds	130 pounds; caught on Eastern Shore seaside in 1975 by Barry Truitt
Tautog	Crab (blue, fiddler, green and mole crabs); clams; whelk	Bottomfishing with bait over underwater obstructions (wrecks, reefs, rocks)	Wrecks and reefs in ocean waters off the coast and in lower Chesapeake Bay; along Chesapeake Bay Bridge Tunnel	January — December peak March — June and October — December	3 - 6 pounds	24 pounds; caught off Wachapreague in 1987 by Gregory R. Bell
Trout, Gray (Weakfish)	Artificial lures (bucktails, lead jigs with plastic tails, metal jigs), live bait (spot and small mullet), peeler crab, squid, cut bait	Jigging or casting artificial lures to schools of fish on bottom or suspended above the bottom; bottomfishing with live and natural baits from anchored or drifting boat; surfcasting with cut bait or squid	Large fish: Chesapeake Bay Bridge Tunnel, Chesapeake Bay over deepwater rocks, and along channel edges, and occasionally in Eastern Shore seaside inlets Small fish: Coastal ocean waters and inlets of Eastern Shore seaside, Chesapeake Bay along channel edges and over deepwater rocks, Chesapeake Bay Bridge Tunnel (especially between 4th Island and High Level Bridge), Chesapeake Bay tributary rivers (especially James, York and Rappahannock)	May — November; peak at Chesapeake Bay Bridge Tunnel May June and October; peak in Chesa- peake Bay, Bay tributary rivers, and Eastern Shore seaside inlets June - September; peak in ocean waters off Eastern Shore from middle September - November	1 – 8 pounds	19 pounds; caught at the Chesapeake Bay Bridge Tunnel in 1983 by Philip W. Halstead
Trout, Speckled	Artificial lures (mirro-sided plugs, bucktails, plastic tail jigs), peeler crab, live bait (small spot, mullet); live shrimp	Spring method: peeler crab baits fished near shore of marshy or grassy areas on flooding tides; Fall method: casting artificial lures; also some live bait fishing, trolling and jigging	Spring: Mobjack Bay area (North, Ware, East, Piankatank Rivers); submerged grass flats and marshes of northern Eastern Shore bayside, Rudee Inlet with lures. Fall: Lynn- haven Inlet, Rudee Inlet; Eastern Shore bayside creeks, Mobjack Bay area, Windmill Point and Gwynn's Island; Poquoson Flats	April — Middle December; peak May — middle June and September — November	2 – 4 pounds	16 pounds; caught at Mason's Beach on Eastern Shore bayside in 1977 by William Katko
Tuna, Bigeye	Whole dead fish (balao), squid, artificial lures (feather lures, cedar plugs, offshore trolling lures)	Trolling	Offshore ocean waters	June — October; peak late June — July	100 - 175 pounds	279 lbs.; caught at the Norfolk Canyon by Shaw Hergenrather in 1999
Tuna, Bluefin	Artificial lures (cedar plugs, feather lures, spoons), squid, small fish	Trolling, chunking and chumming	Offshore ocean waters, especially the Southeast Lumps, the Fingers, 26 Mile Hill, 20 fathom Finger; off Chicoteague	June — September; peak June — August; big fish occasionally found around Chesapeake Light Tower in late November and December	30 - 70 pounds	344 lbs.; caught off Virginia Beach in 1995 by Sean P. Thomas
Tuna, Yellowfin	Whole dead fish (balao), squid, artificial lures (feather lures, offshore trolling lures, cedar plugs)	Trolling, chunking and chumming	Offshore ocean waters	May — October; peak June — September	30 - 70 pounds	203 lbs., 12 oz.; caught at the Norfolk Canyon in 1981 by Bruce Gottwald, Jr.
Tunny, Little (False Albacore)	Artificial lures (small feather and nylon lures, spoons, cedar plugs), strip baits	Trolling, can cast small metal lures to schools of fish on surface	Offshore and coastal ocean waters; occasionally in lower Chesapeake Bay	May — November	6 - 14 pounds	25 lbs., 4 oz.; caught off Virginia Capes in 1964 by Jack Sparrow
Wahoo	Artificial lures (offshore trolling lures, feather lures, spoons, large plugs), small dead fish (balao)	Trolling	Offshore ocean waters	June — October	20 - 40 pounds	109 lbs.; caught off Virginia Beach in 1994 by Delmo Dawson

PUBLIC BOAT LAUNCHING FACILITIES

Eastern Shore Bayside (Accomack County)

Bloxom

Guard Shore Ramp

Guilford Creek Landing

Hunting Creek Ramp

Muddy Creek Ramp

Young Creek Landing

New Church

Pitts Creek Ramp

Onancock

Onancock Town Landing

Poplar Cove Wharf

Schooner Bay Landing (Deep Creek)

South Chesconessex Landing

Pungoteague

Haborton Landing

Hack's Neck Landing

Saxis

Cattail Creek Ramp

The Hummocks

Messongo Creek Landing

Saxis Landing

Shad Landing

Eastern Shore Seaside (Accomack County)

Accomac

Folly Creek Landing

Parker's Creek Landing

Atlantic

Wishart Point Landing

Bloxom

Dix's Gargatha Landing

Kegotank Landing

Chincoteague

Chincoteague Memorial Park

Chincoteague Town Dock

Deep Hole Ramp

Queen Sound Landing

Greenbackville

Greenbackville Harbor

Mappsville

Old NASA Dock (Assawoman Creek)

Quinby

Quinby Harbor Landing

Eastern Shore Bayside (Northampton County)

Bayford

Nassawadox Creek Ramp (South)

Cape Charles

Cape Charles Harbor Ramp

Exmore

Morley's Wharf Boat Ramp

Nassawadox Creek Ramp (North)

Kiptopeake

Kiptopeake State Park Ramp

Eastern Shore Seaside (Northampton County)

Nassawadox

Red Bank Boat Ramp

Oyster

Oyster Public Harbor

Willis Wharf

Willis Wharf Boat Ramp

Essex County

Bowlers Wharf

Bowlers Wharf Ramp

Tappahannock

Hoskins Creek Landing

Prince Street Public Landing

Gloucester County

Gloucester Point

Gaines Point Ramp

Gloucester Point Landing

Guinea Neck

Browns Bay Public Ramp

Jordan Neck Ramp (Monday Creek)

Monday Creek Ramp

Perrin Creek Ramp

Sedges Creek Ramp

Severn Holiday Ramp (Severn River)

Ordinary

Timberneck Creek Ramp

Piankatank River

Cypress Shores Ramp

Deep Point Landing

Severn River

Bray's Point Ramp

John's Point Ramp

Ware River

Paynes Wilson Creek Ramp

Warehouse Landing

York River

Aberdeen Creek Ramp

Cappahosic Landing

Clay Bank Ramp

Tanyard Landing (Poropotank River)

Hampton Roads Area

Chesapeake

Deep Creek Locks Park

Great Bridge Locks Park

Hampton

Dandy Point Ramp (Back River)

Gosnold Hope Park (Back River)

Sunset Creek Ramp (Hampton River)

West Bank Ramp (Hampton River)

Virginia Beach

Lynnhaven Inlet Boat Ramp*

Owl's Creek Ramp (Rudee Inlet)

Seashore State Park Ramp (Broad Bay)

Newport News

Anderson Park

Denbigh Park Ramp(Warwick River) Deep Creek City Pier (Warwick River) James River Bridge Park Ramp

Seafood Industrial Park Ramp

Norfolk

45th Street Ramp (Lafayette River) Haven Creek Ramp (Lafayette River)

Lafayette Park Ramp

Lambert's Point Park Ramp

Willoughby Landing (Ocean View)

Poquoson

Bennetts Creek Landing Messick Point Landing

Plum Tree Island Wildlife Refuge Rens Road Ramp (Poquoson River)

Portsmouth

City Park Boat Ramp Elizabeth River Park

Suffolk

Sleepy Hole Park

Isle of Wight County

Rescue

Jones Creek Boat Ramp Tyler's Beach

Tyler's Beach Boat Ramp

Lancaster County

Greenvale Creek Ramp

Mathews County

East River

Town Point Landing Williams Wharf

Horn Harbor

Horn Harbor Ramp

Milford Haven

Cedar Lane Ramp

Fitchett's Wharf

Milford Haven Landing

Queen's Creek Ramp

North River

Auburn Ramp

Piankatank River

Godfrey Bay Public Ramp Warehouse Creek Landing

Winter Harbor

Old Mill Landing

Winter Harbor Landing

*Under Construction

Middlesex County

Deltaville

Broad Creek Ramp (Rappahannock R.) Jackson Creek Ramp (Piankatank R.) North End Ramp (Rappahannock R.)

Hartfield

Mill Creek Ramp (Rappahannock R.)

Locklies Creek

Locklies Creek Ramp

Parrotts Creek

Mill Stone Ramp

Urbanna Creek

Oaks Saluda Ramp

Whiting Creek

Whiting Creek Ramp

Northumberland County

Coan River

Forest Landing

Rowes Landing

Great Wicomico River

Cedar Point Landing (Reedville)

Cockrell Creek Ramp (Reedville)

Cranes Creek Landing (Wicomico Church)

Glebe Point Landing (Reedville)

Shell Landing (Fleeton)

Little Wicomico River

Shipping Point

Yeocomico River

Lodge Landing

Richmond County

Lancaster Creek

Simonson Landing

Totuskey Creek

Totuskey Creek Landing

Westmoreland County

Bonum Creek

Bonum's Landing

Colonial Beach

Colonial Beach Landing

Lower Machodoc Creek

Branson Cove Ramp

Nomini Bay

Currioman Dock

Popes Creek

Westmoreland State Park

Yeocomico River

Kinsale Landing Ramp

York County

Back Creek

Back Creek Park

Back Creek Ramp

Wormley Creek

Old Wormley Creek Landing

THE MODERN ANGLER



he protection and conservation of marine resources has never been more important than it is today. The populations of many popular fish species have been

stressed, and in many cases the causes and solutions are complex. Saltwater recreational fishermen are a part of the process which impacts marine resources. Every time we head out on the water to

enjoy a day of fishing, we affect the marine environment.

Understanding the changing conditions which have affected marine resources, many a direct result of an increasing population and the development of natural areas along the coast and in the Chesapeake Bay watershed, is an important part of realizing what must be done to protect them for the future.

Coastal and estuarine water quality, in places like the Chesapeake Bay and its tributary rivers, has declined due to a myriad of actions which have taken place for decades. Oil and chemical spills, sewage outfalls and run-off, pesticide and fertilizer run-off from farms, industrial and urban pollution, and dredging have adversely affected water quality. Poor water quality can impact the ability of fish to reproduce, find a steady food supply, and survive the stress of life in the dynamic marine environment. The trend of declining water quality has been reversed in many areas in recent

years, but major improvement will be a long term process. In the interim, marine life must cope with water conditions which are less than optimal.

Habitat destruction has caused the loss of valuable spawning and nursery areas for many marine animals. Construction of bulkheads, fill operations, dredging and channelization, and substandard water quality have caused wetlands and submerged seagrass beds to disappear at alarming rates. This loss of habitat also contributes to declining water quality.

Finally, the demand for marine fishery resources has increased markedly. The numbers of recreational fishermen tripled from

> ued to grow. Similarly, the demand for seafood increased 20% from 1984-1994 and has continued to grow. This increase in demand for fishery resources coupled with the use of increasingly sophisticated and efficient gear has put a severe strain on many fishery resources. The result is marine fisheries which have become highly regulated, but in

1955 to 1985 and has contin-

many cases the management process cannot keep pace with the decline in fish stocks. The days of unregulated harvests of fish are ending with even recovering populations of fish needing continued regulatory protection to prevent overharvesting and additional fishery collapses. We must recognize the important part the recreational fishery plays in this complex fisheries management web; and, we must work to develop a personal commitment to resource conservation, while developing and adhering to a high standard of angling ethics.

Poor water quality can impact the ability of fish to reproduce, find a steady food supply, and survive the stress of life in the dynamic marine environment.

STRIPED BASS

The following are guidelines which the modern angler should consider incorporating into his daily fishing activities:

- 1. KNOW AND ABIDE BY ALL FISHERY REGULATIONS. Possession limits and size limits are established for one purpose to provide a minimum level of protection for fish stocks. Remember, possession limits are limits, not goals which must be achieved to have successful trips. Recreational fishermen should keep only the fish they intend to use and release the rest even when the limits established by regulation would allow the keeping of more fish.
- 2. REPORT VIOLATIONS OF FISHERY REGULATIONS. Do not tolerate illegal and irresponsible fishing practices. Voluntary support of fishery regulations is necessary because there are too few enforcement officers to cover the huge water area in Virginia.
- 3. PRACTICE CATCH AND RELEASE FISHING. Experience the pleasure of watching a healthy fish swim away. Studies have shown that released fish have an excellent chance of surviving, contributing to conservation and management efforts to protect our marine fish. Consider enhancing the personal satisfaction derived from releasing fish by becoming involved in a tagging program.
- 4. KNOW HOW TO PROPERLY HANDLE FISH. Releasing fish requires more than just "throwing fish back in the water". Know the best ways to handle fish, so they will not be injured, and use the proper tools to unhook your fish. A good source of information on handling fish is the brochure "Careful Catch" published by the Chesapeake Bay Foundation, (804) 780-1392 or (410) 268-8816.
- 5. ASSIST WITH FISHERIES MANAGEMENT. Support fisheries management and become involved in the process.

- Report any tagged fish you recapture, be willing to participate in creel and information surveys, and consider attending meetings and public hearings. Explore the opportunity to become involved with a recreational fishing organization which works for resource conservation.
- 6. DISPOSE OF ALL TRASH PROPERLY. Do not throw any trash into the water, save it for disposal onshore. Fishing line and other plastic items are particularly harmful, often entangling fish and other marine life. Plastic sandwich bags look like jellyfish and are eaten by sea turtles, which often die as a result. Oil, gasoline, antifreeze and cleaning products cause pollution and can be toxic to marine life.
- 7. PRACTICE SAFETY AFLOAT. Learn basic boating skills, have proper safety equipment on board, and know boating regulations. Provide assistance when a fellow boater or angler breaks down or gets into trouble.
- 8. SHOW RESPECT AND COURTESY TO OTHERS. Fishing is a fun, relaxing activity, as long as respect is accorded others. Treat other fishermen the way you want to be treated; don't crowd them or create conflicts with them. Similarly, respect other people using the waters (e.g. boaters, divers) and respect property rights of people living on the water. One of the most important things anyone can have is a good reputation, and fishermen should work to cultivate a good reputation and image.
- 9. SHARE THE SPORT OF FISHING WITH OTHERS. Fishing is a great way to spend time with family and friends. Share the gift of fish with others, especially youngsters. Lead by example, practice and share all of the ethical guidelines contained in this article.

USE A LANDING NET

One of the biggest problems faced by many anglers is how to get big fish from the water into a boat.

Traditional angling practices call for the use of a gaff, which is a large barbless steel hook attached to a pole with a handle. The gaff is stuck into the fish and used to hoist the fish aboard.

Serious injuries are inflicted upon fish when they are gaffed. Even "lip gaffing" a fish creates a very real injury and can lead to infection. With the proliferation of size limits and creel limits on saltwater fish necessitating the release of many fish, the expanding interest in catch-and-release fishing, and the growing number of tagging programs, many anglers have abandoned the use of gaffs. In some cases, such as the landing of striped bass in Virginia, the use of gaffs is no longer legal.

Landing nets are a good alternative to gaffs in most situations. Landing nets come in a variety of sizes and can accommodate most large fish, including the often volatile cobia. In fact, large fish landed with a net usually are more docile and easier to handle than fish which have been stuck with a gaff. This reduces the chances for injuries to the fish and the angler.

Landing fish with a net is relatively easy. The fish should be led head first into the net, and the hoop should be immediately lifted clear of the water. When attempting to land a large fish, do not lift the fish into the boat using the net handle. This may result in the handle bending or breaking, causing damage to the net and loss of the fish. When the hoop is lifted clear of the water, grab the edges of the hoop and lift the fish into the boat.

Control over a large fish often can be maintained if the net is not dropped on the deck in the cockpit of the boat. Rest the fish on the deck, while continuing to hold the sides of the hoop above the floor. This continues to suspend the fish within the confines of the net, while most the weight of the fish is resting on the deck. The fish can be unhooked while in the net, then the fish can be measured and released or placed in the fish box.

GET HOOKED ON CIRCLE HOOKS

The popularity of circle hooks has exploded in recent years, but they are not new inventions. The first circle hooks were fashioned from bone. wood and stone more than 10,000 years ago. Their modern usage began in the commercial longline fishery, which experienced



increased "hook-up" ratios and improved gear retention due to the tendency of the hooks to lodge in the corner of the mouth.

These same attributes stimulated interest among recreational fishermen more than fifteen years ago, but the popularity of circle hooks was limited by the lack of diversity in hook sizes and styles. Originally, only large sizes were available in thick, heavy gauge wire. Today, the diversity of circle hooks is seemingly endless, with sizes as small as #18 and as large as 20/0 and a variety of hook and wire styles.

So, what is a circle hook and how does it work? Circle hooks are fishing hooks with their points bent around until they are perpendicular (or nearly perpendicular) to the shank of the hook.

Typical fish hooks (now called "j-hooks" by many people) have points that are parallel to their shanks or just slightly curved inward. Circle hooks work by catching on exposed "edges" in the mouths of fish - typically the corners of the mouth or the lips. The fish will swallow the bait (and hook), then, as the fish turns and/or swims away, the hook is pulled to the corner of the mouth where the point "catches" and the hook rotates automatically buring itself in the corner of the mouth or the lip. The unique curved shape of the hook with the point running perpendicular to the shank prevents the hook from catching on internal organs (such as the stomach), thus reducing the incidence of deeply hooked fish. Also, because of the way the hook catches and rotates into the lip or corner of the mouth, once a fish is hooked, it is almost impos-



sible for the hook to pull out during the fight. However, the hook is easily removed by the angler, by simply rotating the hook back out on the same path it caught and entered the fish's lip or corner of the mouth.

The most important aspect of using circle hooks is not to aggressively set the hook

when a fish strikes. Circles hooks are designed to catch on an edge of the fish's mouth as it swims off and aggressive hook setting will pull the hook free before it has an opportunity to catch and penetrate. The best hook setting is none at all; let the biting action of the fish and its own movement set the hook.

The conservation advantages of circle hooks are obvious. The rate of hooking fish in the lips or corners of the mouth approaches or exceeds 95% for "true" circle hooks. J-hooks, often lodge deeply in the gullet or stomach causing serious damage to vital organs, and can "tear" flesh and internal tissues by ripping out and resetting while an angler is fighting a fish. Use of circle hooks can greatly increase the survival rate for fish that are released. In addition, circle hooks are difficult for fish to dislodge once they are hooked, resulting in fewer lost fish. In certain species of fish, research also has shown a high rate of hooking fish (better than similar sized j-hooks), but in other species the results have been mixed.

The variety of styles and sizes of circle hooks becoming available is enabling anglers to better match their terminal gear to targeted species, which is improving the effectiveness of circle hooks. In addition, manufacturers have added several features to improve their versatility. However, some features, such offset points and less radical bend to the point (a "semi" circle hook), may offer only some of the advantages of a "true" circle hook. Remember the more offset to the hook point or the less radical the bend of the point, the more exposed the hook point will be, the less the hook will function as a circle hook, and the more often fish will be hooked deeply or "gut-hooked" in soft tissue or vital internal organs. Any design change that offers more exposure of the hook point will offer greater opportunities for the hook to catch places other than the lips or corners of the mouth and is likely to cause more physical harm to the fish.

The bottom line is circle hooks are another tool anglers have available to help them become better fishermen and better protectors of their saltwater fishery resources. They may not be the best choice for every fishing situation, but many anglers are finding they prefer to use circle hooks for most of their fishing activities.

VIRGINIA'S ARTIFICIAL REEF PROGRAM



ishermen have known for centuries that fish congregate around shipwrecks and natural anomalies on the bottom of coastal waters, such as oyster

rocks, exposed bed rock and coral reefs. This has resulted in attempts to artificially recreate these types of habitat in virtually every body of water in the world.

Attempts to replicate productive, natural fish habitat have led to the use of a variety of materials, from U. S. Army tanks and Christmas trees to derelict automobiles and their tires. A variety of ships even and some kitchen sinks have been sunk by enterprising reef builders. Some materials have worked well, while others seemed to disappear with the tide.

All of these efforts were attempts to create artificial reefs, which are man-made or natural materials intentionally placed upon the bottom of marine or freshwater environments to provide habitat for fish.

HOW REEFS WORK

A great portion of the bottom in coastal waters and the Chesapeake Bay consists of soft mud or shifting sand. This relatively stark, featureless environment offers little attraction for many types of marine life. Natural and artificial reef areas provide places for a variety of marine life to live and food to eat.

The surface area, or hard substrate, of an artificial reef provides a place for encrusting organisms such as barnacles, mussels and tube worms to grow. Unable to live on soft or shifting bottom, these organisms attach themselves to hard surfaces. Most feed by filtering plankton and other small organisms from the water. Once this initial "fouling" community is established a wide variety of crustaceans, such as crabs and shrimp, and soft-bodied organisms, such as

worms, appear. Then, the "food chain" continues to expand with the appearance of predators like tautog,

which feed on crabs and mussels, and sea bass, which feed on crabs and shrimp.
Artificial reefs provide shelter for a variety of marine organisms. Fish and crabs seek out the nooks and crannies in artificial reefs to hide from predators. Fish use the larger interior areas of the struc-

ture to get away from wave action and currents, enabling them to expend less energy. Deflected currents and eddies carry food to fish waiting to ambush an easy meal.

Reef dwelling fish appear to prefer low profile structures with numerous cavities. Tautog and sea bass, for example, can be found inside artificial reef structures, with tautog often nestling down into holes or cavities in or between structures.

Other species of fish, although not considered reef dwellers, can be found on artificial reefs. Schooling baitfish, such as anchovies,

Predators, possibly attracted by the abundance of food and the sense of protection afforded by reefs, are always present.

TAUTOG



silversides, scad and menhaden, are attracted to high profile structures. These larger structures, such as shipwrecks, towers and bridges, may offer a point of orientation in an otherwise featureless environment and protection in their shadows.

Predators, possibly attracted by the abundance of food and the sense of protection afforded by reefs, are always present. Amberjack, bluefish, king mackerel, cobia, striped bass, and sharks are some of the species found around coastal and Chesapeake Bay reefs.

BUILDING ARTIFICIAL REEFS

Virginia's current Artificial Reef Program, which is managed by the Marine Resources Commission, traces its roots back over 40 years. In the 1950's recreational fishermen spearheaded efforts resulting in the sinking of automobile bodies, tires and over 100 surplus U.S. Navy landing craft and pontoon barge sections in the Chesapeake Bay and ocean waters off Virginia Beach.

The Marine Resources Commission became formally involved in reef building as the authorized recipient of six World War II Liberty ships in the early 1970's. These were scrapped and cleaned to U.S. Coast Guard, Environmental Protection Agency, and Army Corps of Engineers requirements, with great care taken to remove all oil and fuel residue.

All six vessels were sunk in offshore waters to form the popular Triangle Reef off Virginia Beach and the Parramore Reef off Wachapreague.

During the 1970's and early 1980's, the Artificial Reef Program primarily used "materials of opportunity" to create artificial reefs. Concrete pipe, ships, and automobile tires were used most often. In addition to simple deployments, attempts were made to use these materials to develop structures that provided stability, durability and a maximum amount of surface area and interior space. For example, tires were split and sunk vertically into concrete bases and concrete pipe was bundled into stacks.

From the mid 1980's into the late 1990's concrete structures were manufactured to complement materials of opportunity, which continued to provide a low cost method for building reefs. High profile structure was created with concrete "igloos". These structures measured 7-1/2 feet in height with a base spanning over 12 feet and weighed approximately 12,000 pounds. Low profile habitat was created with concrete tetrahedrons,

which had a profile of approximately 40 inches and a weight of 500 pounds. The tetrahedron shape was chosen for its low center of gravity, which made the unit very stable. Ninety-nine igloos and thousands of tetrahedrons have been deployed on Virginia's artificial reefs.

As the 1990's drew to a close, various materials of opportunity, with the exception of automobile tires which proved difficult to

anchor on reef sites, became the primary structures used in reef construction once again. In 1996 and 1998 "Operation Reef-Ex" supplied surplus military vehicles in a major reef deployment effort in Virginia. Concrete bridge decking and pilings from several sources was used and provided excellent reef habitat. Regardless of the source or type of material used in reef construction, however, the Artificial Reef Program always ensured

A good way to locate a particular reef structure (or concentrations of structure) is to steer to the published coordinates for the structure and drop a small buoy. Then, run a circular or grid pattern around the buoy until the structure appears on a depth sounder. A second buoy can be deployed directly over the structure, and the exact coordinates should be recorded in the memory of your GPS or Loran C system and written in a log book.



that all reef materials were placed upon permitted reef sites and met rigorous state and federal environmental standards.

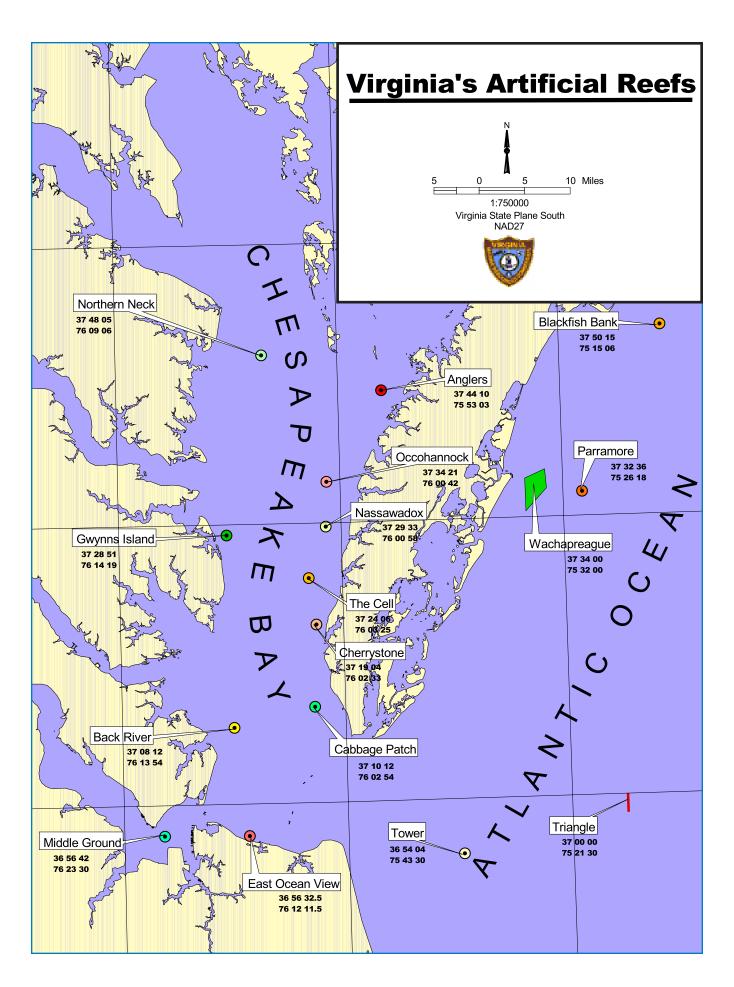
LOCATING ARTIFICIAL REEFS

Latitude/longitude coordinates used for positioning with GPS systems and Loran C coordinates are provided for major structures and deployment areas at each reef site. It is a good idea to remember there is some variation among GPS and Loran units, so position coordinates seldom match exactly. In addition, the GPS data is acquired through side-scan sonar surveys. This involves towing a transducer (tow-fish) behind a boat to locate the reef structures. The differential GPS receiver is on board the towing vessel, which creates a 25-30 foot difference between the receiving antenna of the GPS unit and the towed transducer. This creates small discrepancies in the actual latitude/longitude positions reported by the GPS unit and the actual positions of the reef structures. In many cases reported positions will denote or describe deployment "fields" within which are concentrations of structure.

Yellow buoys designate the locations of all permitted reefs in the Artificial Reef Program. However, these buoys may not be stationed directly over any structure. Buoys may be stationed in the center or on the perimeter of a reef site, or within a short distance of the published coordinates for structures on the reef site.

Storms, collisions and vandalism can cause the yellow buoys to be moved from their intended locations, and mooring locations may change during normal maintenance operations. Buoy status reports are available from the Artificial Reef Program office. If a yellow reef buoy is missing from a reef site, or appears to be improperly located, contact the Artificial Reef Program so corrective measures can be taken. The program address and phone number follow:

Virginia Marine Resources Commission Artificial Reef Program P.O. Box 756 2600 Washington Ave. Newport News, VA 23607-0756 (757) 247-2263



ARTIFICIAL REEF SITES

ANGLER'S REEF

Angler's Reef is located approximately three nautical miles WNW of the mouth of Onancock Creek. The permitted site is rectangular with the perimeter defined by Loran C lines. More than 1600 concrete tetrahedrons have been deployed on the bottom in a circular pattern around the yellow buoy marking the site.

GPS & Loran C Coordinates 37 44.012N - 75 53.144W (41845.9/27241.7)

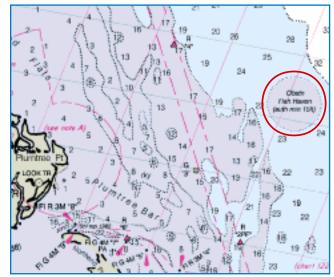
Structures 1600 concrete tetrahedrons placed in bundles of 5-6 each

NOAA Chart 12225

BACK RIVER REEF

This reef is located approximately three nautical miles east of Plumtree Point, off the mouth of the Back River. Forty concrete igloos have been placed on the bottom in an "X" shaped pattern, the centers of the igloos 50 feet apart. The legs of the "X" run NW - SE and NE - SW. The center of the "X" is located at GPS Coordinates 37 08.220N - 76 13.750W (41393.5/27254.2). Concrete tetrahedrons have been placed along each side of the northern legs of the reef, while concrete pipe, girders, and clusters augments the southern legs.

GPS & Loran C Coordinates 37 08.295N - 76 13.686W	Structures concrete bridge girders
37 08.254N - 76 13.675W	concrete bridge girders
37 08.295N - 76 14.153W	centerpoint of 200' diameter concrete cluster
37 08.174N - 76 14.013W	centerpoint of 100' diameter concrete cluster
37 08.395N - 76 14.210W (41394.26/27255.56)	1000 tons of concrete pier rubble



NOAA Chart 12221

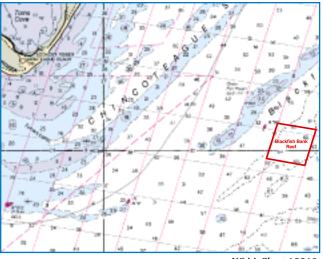
BLACKFISH BANK REEF

Located 5.8 nautical miles SE of Assateague Beach, Blackfish Bank Reef was developed through the efforts of the Town of Chincoteague and the Chincoteague Island Charterboat Association. The permitted site is rectangular in configuration and measures 1300 yards by 1600 yards. Forty armored personnel carriers were scattered at this site as part of "Operation Reef-Ex '98." This program of the New Jersey Army National Guard at Fort Dix transported and prepared military vehicles for artificial reef deployment. Actual deployment on the reef was a joint effort of the U.S. Naval Weapons Station Earle at Colt's Neck, NJ, the U.S. Army 24th Transportation Battalion at Fort Eustis, VA and the U. S. Coast Guard at Chincoteague.

GPS & Loran C Coordinates 37 50.147N - 75 15.183W (41967.2/27077.2)

Structures

centerpoint of 400' diameter deployment of military vehicles'



NOAA Chart 12210

CABBAGE PATCH REEF

Constructed during the fall of 2000, this reef is located 5.5 miles SSW of the entrance to Cape Charles harbor. The initial deployment of "T-Beams", averaging 60 feet in length and 10 feet in width, provide structure with approximately four feet of profile off the Bay bottom. The building of this reef was the result of efforts by the Coastal Conservation Association of Virginia, Eastern Shore chapter, and it was funded with saltwater license revenues. The reef is marked with a yellow artificial reef program buoy. The structures are deployed in groups of four arranged in three distinct rows. The long axis of deployment runs east to west.

GPS Coordinates 37 10.311N - 76 02.964W

Structures

Center point of 36 "T" beams

"THE CELL" REEF

The remains of the Wolf Trap Degaussing Station (The "Cell"), which is marked by Coast Guard obstruction buoy WT2, is the major structure on this circular reef site. Concrete tetrahedrons and "tire-in-concrete" units (TICs) have been deployed in a circular pattern around a yellow artificial reef buoy stationed at 37 24.065N – 76 03.407W. The Cell Reef is located due west of the mouth of Hungars Creek on the Eastern Shore Bayside.

GPS & Loran C Coordinates Structures

37 24.299N - 76 03.662W	portions of the foundation
37 24.196N - 76 03.645W	of the "CELL"
(41598.3/27245.0)	degaussing station
37 24.149N - 76 03.417W	200' wide field of low profile material

^{*}Top of structure is extremely irregular and portions may be very close to the surface; boaters are advised to exercise caution.

CHERRYSTONE REEF

This circular reef site is situated NNW of the mouth of Cherrystone Creek on the Eastern Shore bayside. Over 2900 TICs have been scattered around this buoyed location. A cluster of concrete igloos is located at 41541.2/27231.0 (Loran C Coordinates) and several stacks of concrete pipe are positioned at (41539.0/27230.8). The major structure at this site is concrete deck sections from the Chesapeake Bay Bridge-Tunnel. Tidal currents tend to be strong in this area.

GPS Coordinates 37 19.038N - 76 02.468W 37 19.223N - 76 02.732W 37 19.072N - 76 02.734W 37 19.137N - 76 02.843W 37 19.042N - 76 02.864W 37 19.229N - 76 02.787W 37 19.137N - 76 02.807W 37 19.069N - 76 02.780W

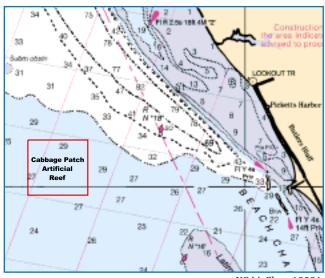
Structures

centerpoint (buoyed) of 67 concrete deck sections from CBBT

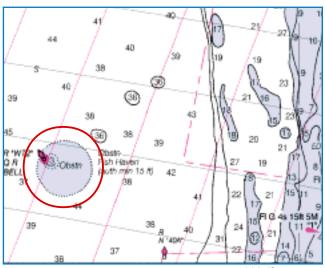
end points of 100' wide field of concrete tetrahedrons

end points of 200' wide field of concrete tetrahedrons & TICs

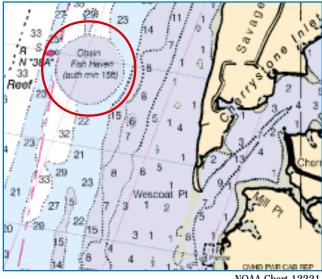
points within a field of concrete tetrahedrons & TICs



NOAA Chart 12221



NOAA Chart 12225

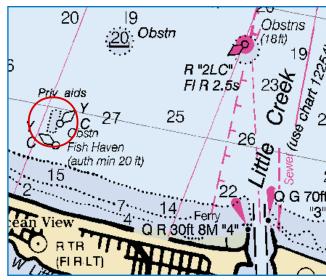


NOAA Chart 12221

EAST OCEAN VIEW REEF

Originally referred to as the ODU Reef, this circular reef site is located 2500 yards west of the entrance to Little Creek, approximately 900 yards off the beach. The original reef site was a rectangular grid with 40 concrete igloos deployed south of the center. Immediately north of the center are 1000 tons of concrete bridge rubble, supplied and deployed at no cost by McLean Contacting Company. Concrete tetrahedrons have been scattered among the igloos.

GPS & Loran C Coordinates 36 56.600N - 76 12.150W (41259.8/27224.5)	Structures Reef Center
36 56.587N - 76 12.191W 36 56.589N - 76 12.156W 36 56.491N - 76 12.223W 36 56.488N - 76 12.181W	Corner boundaries of field of structures in the northern portion of reef
36 56.513N - 76 12.195W 36 56.525N - 76 12.142W 36 56.491N - 76 12.223W 36 56.488N - 76 12.181W	Corner boundaries of field of structures in the southern portion of reef

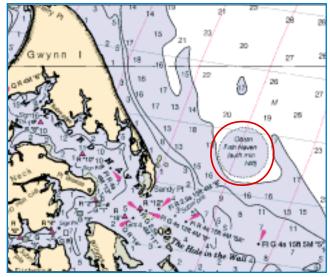


NOAA Chart 12221

GWYNN ISLAND REEF

The Gwynn Island Reef is a circular reef site located 1.35 nautical miles NE of the "Hole in the Wall". The site is buoyed and features a variety of sunken structures, including 3762 tons of bridge decking supplied and deployed at no charge by McLean Contracting Company.

GPS & Loran C Coordinates 37 28.850N - 76 14.300W (41637.1/27299.6)	Structures reef center and center of deployment of 6 concrete igloos
41637.4/27299.5	3762 tons of bridge decking
37 28.857N - 76 14.263W	cluster of concrete igloos and TICs
37 28.916N - 76 14.319W 37 28.801N - 76 14.323W	end points of a 300' wide field of TICs
37 29.077N - 76 14.079W	small cluster of concrete tetrahedrons



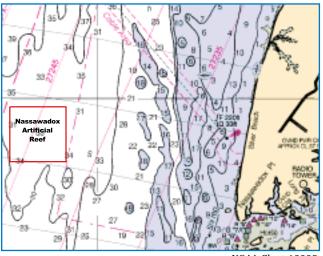
NOAA Chart 12225

NASSAWADOX REEF

Concrete "T-Beam" structures identical to those placed upon the Cabbage Patch reef were initailly deployed to form this reef site. The reef is located 2.8 nautical miles NW of the mouth of Nassawadox Creek. The Coastal Conservation Association of Virginia, Eastern Shore chapter, spearheaded efforts to create this reef, and it was funded with saltwater fishing license revenues. A yellow artificial reef program buoy marks this reef. Concrete "T" beams deployed in groups of four arranged in four distinct rows comprise the major structures at this site. The long axis of deployment runs north to south.

GPS & Loran C Coordinates 37 29.578N - 76 00.956W (41664.5/27244.0)

Structures reef center and center of "T" beam deployment



NOAA Chart 12225

NEWPORT NEWS MIDDLE GROUND REEF

Located in Hampton Roads at the lower end of the James River, Newport News Middle Ground Light marks the center of the reef. Reef materials are placed in a ring around the light, no closer than 200 feet from the light and no farther than 1000 feet. Sunken structure includes reef balls, concrete rubble, and buoy sinkers. This is a dual purpose reef, serving as a recreational fishing reef and a brood stock sanctuary for clams. Juvenile clams are placed on the reef to enhance the clam population of the lower James River. These clams are not harvested, but remain on site to provide seed for the lower river areas. Many groups were instrumental in development of this reef including the Coastal Conservation Association of Virginia, Peninsula chapter, U.S. Coast Guard, Magann Construction Corp. and Brawley Middle School in Charlottesville.

GPS Coordinates 36 56.617N - 76 23.459W	Structures centerpoint of 150' diameter concrete cluster
36 56.628N - 76 23.536W	centerpoint of 400' diameter concrete cluster
36 56.760N - 76 23.597W	centerpoint of 300' diameter concrete cluster
36 56.719N - 76 23.566W	small deployment of reef balls

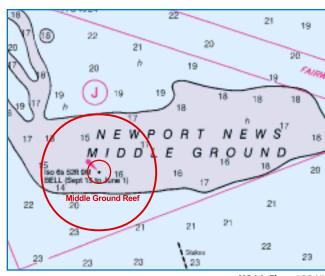
NORTHERN NECK REEF

This rectangular reef site, with its perimeter defined by Loran C lines, is located approximately 7 nautical miles east of the Great Wicomico River Light. More than 1600 concrete tetrahedrons have been deployed on the bottom in a circular pattern around the yellow buoy marking the site. The structures are located approximately 100 feet from the buoy in a band 200 feet wide.

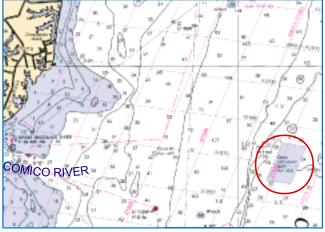
GPS & Loran C Coordinates 37 48.069N - 76 09.293W (41872.2/27322.40)

Structures

1600 concrete tetrahedrons placed in bundles of 5-6 each



NOAA Chart 12245



NOAA Chart 12225

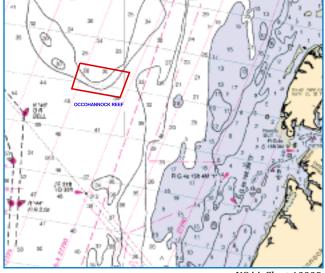
OCCOHANNOCK REEF

Occohannock Reef, which is rectangular in configuration, was initially developed in early 1997. The perimeter of the reef is bounded by Loran C lines 41724, 41718, 27256, and 27251. The site is centered approximately 4 nautical miles WNW of the mouth of Occohannock Creek. A yellow buoy marks the centerpoint of the initial deployment of 1200 concrete tetrahedrons.

GPS & Loran C Coordinates 37 34.350N - 76 00.699W (41721.5/27253.9)

Structures

1200 concrete tetrahedrons

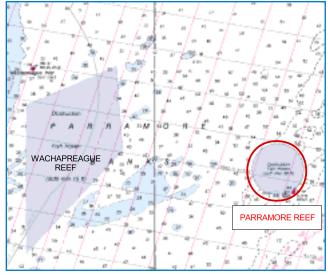


NOAA Chart 12225

PARRAMORE REEF

A pair of Liberty Ships, the Page and Mona Isle, are the main structures on this circular reef site located 8.7 nautical miles on a bearing of 102 degrees from the Parramore Coast Guard Tower. The ships were acquired and sunk through the efforts of the Seaside Sport Fishing Improvement Association, which was the original permitee of this reef site. The Liberty Ships are located at the extreme southern end of the reef site, while TICs are scattered around the center of the site.

GPS & Loran C Coordinates 37 32.000N - 75 26.275W (41746.3/27095.5)	Structures Liberty Ship, Page
37 31.830N - 75 26.420W (41744.0/27096.0)	Liberty Ship, Mona Isle
37 32.680N - 75 26.300W (41753.2/27096.9)	Coast Guard Barge

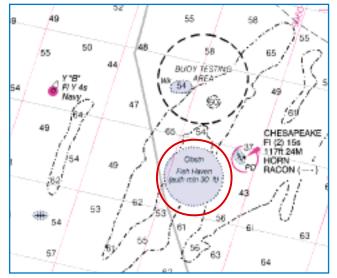


NOAA Chart 12210

TOWER REEF

Centered approximately .6 nautical miles WSW of the Chesapeake Light Tower, the Tower Reef was originally permitted to the Tidewater Artificial Reef Association of Virginia. TARAV was responsible for the placement of more than 100 pontoon sections and numerous landing craft and other vessels on the site. Virginia's Artificial Reef Program added two barges and four drydock sections to the reef and scattered thousands of TICs on the circular site. The Electric Boat Division of General Dynamics deployed the deck barge and the Chesapeake Corporation deployed the hopper barge at no cost to the Artificial Reef Program.

GPS & Loran C Coordinates 36 54.133N - 75 43.350W	Structures Four 60' x 80' drydock sections
(41286.2/27103.0)	roul oo x oo diydock sections
36 54.050N - 75 43.350W (41285.8/27102.8)	Deck barge w/ house (130' x 31')
36 54.100N - 75 43.250W (41286.6/27102.8)	Hopper barge (195' x 35')

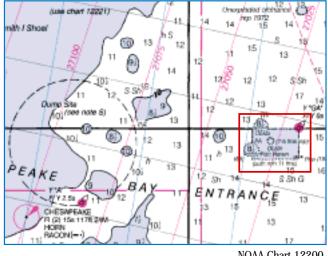


NOAA Chart 12221

TRIANGLE REEF

Four Liberty Ships and a Coast Guard cutter are the main structures on this rectangular reef site, which is located 16.5 nautical miles on a bearing of 73 degrees from the Chesapeake Light Tower. The Tidewater Artificial Reef Association of Virginia was the original permitee of this site and was instrumental in acquiring the four Liberty Ships.

1 0	<i>J</i> 1
	Structures Liberty Ship Webster
	Liberty Ship George P. Garrison
	Liberty Ship James Haviland
	Liberty Ship Edgar Clark
	USCGC Ship Cuyahoga



NOAA Chart 12200

WACHAPREAGUE REEF

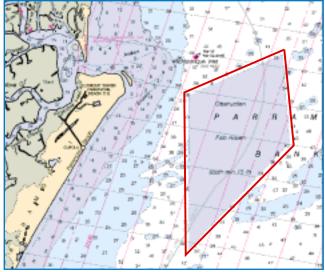
This small reef was developed as an offshore test site for experimental reef structures, and no additional materials have been added to the site. The reef is located approximately 3.8 nautical miles from the Parramore Coast Guard Tower.

GPS & Loran C Coordinates 37 33.030N - 75 32.410W (41747.5/27125.2)

Structures 6 concrete pipe stacks

37 32.500N - 75 32.870W (41741.0/27126.1)

6 concrete igloos



NOAA Chart 12210

PROJECTED ARTIFICIAL REEF SITES

The Artificial Reef Program is working with groups of anglers on the Peninsula and the Northern Neck to acquire permits for two additional reefs in the Chesapeake Bay. One site is proposed for the York Spit area, and another is projected for the waters off the lower portion of the Northern Neck. Updates on these reefs will be posted on the Virginia Marine Resources Commission website: www.state.va.us/mrc/.





VIRGINIA SALTWATER FISHING TOURNAMENT



he Virginia Saltwater Fishing Tournament, which was inaugurated in 1958 to promote and develop Virginia's abundant recreational fishing resources, is

the premier state-sponsored angling awards program in the country. Over the years it has significantly enhanced the quality, quantity, and enjoyment of fishing in Virginia, and it has served as a model for similar programs in other states.

one of over 100 designated weigh stations located primarily at marinas, tackle shops and piers throughout the state. If the fish qualifies, the angler will be mailed a Citation plaque at the end of the year. Anglers are eligible to earn one Citation plaque per species, annually.

PROGRAM HISTORY

On May 1, 1958 Governor Lindsay J. Almond initiated the Virginia Saltwater Fishing Tournament with a ceremonial "first cast" in the waters off Ocean View in the city of Norfolk.

Fifteen species of fish were eligible for Citation recognition the first year, including white marlin which

awards, making the Tournament one of the first to provide recognition for releasing trophy fish alive. Anglers registered 500 fish for Citation awards during its inaugural year. Since its inception,

were eligible for release

the Tournament has awarded more than 130,000 Citation plaques for outstanding catches—an average of slightly more than

3,000 per year. Bluefish have produced the most tournament awards, with more than 14,000 Citations issued during the program's rich history. Flounder have yielded over 13,000 awards, with white marlin producing over 11,500 awards (almost all for released fish).

OUTSTANDING ANGLER AWARDS PROGRAM

Special recognition is given to anglers who earn Citation awards for several species of fish in one year. Anyone winning Citation

PROGRAM AWARDS

Anglers who catch fish meeting established minimum weights, or who catch and release fish meeting established length criteria, are awarded handsome wall plaques, called Citations. There are no entry fees for the program and no preregistration requirements, although participants

must possess a valid Virginia saltwater fishing license, must be fishing from a boat or pier which possesses the appropriate "blanket" saltwater fishing license, or must be exempt from licensing due to age. Eligible species of fish total 34, ranging from the diminutive spot to bruising blue marlin, and 16 species are eligible for special "release" awards. Eleven species of fish, including all billfish, sharks, red drum and black drum are only eligible for awards if they are released.

To register a catch for a Citation the angler must weigh his fish, or enter his release, at

The Virginia Saltwater Fishing Tournament maintains and certifies state records for more than 50 species of marine gamefish commonly found in Virginia waters.

WAHOO

awards for 6 different species of fish in a single year, automatically qualifies as a Virginia Expert Saltwater Angler. The angler receives a certificate and a specially designed silver pin to mark his achievement.

Virginia also recognizes the accomplishments of anglers over longer periods of time with its Virginia Master Saltwater Angler award. This award is based upon the cumulative number of Citations an angler earns over a period of years. To qualify an angler must earn 25 Citations in a minimum of five species, with credit given for a maximum of only one Citation per species per year. Anglers have an unlimited period of time to accumulate their Citations, starting in 1996-the year this program was instituted. Recipients receive a certificate and a specially designed gold-plate pin. Additional levels of recognition are accorded to anglers when their citation total reaches 50 with a minimum of 10 different species and 75 with 15 different species.

CHESAPEAKE BAY GRAND SLAM

In order to recognize exceptional angling achievement and a commitment to conservation, the Virginia Saltwater Fishing Tournament began offering a special award in 1999. Anglers catching and releasing a red drum, black drum, and a cobia meeting the minimum requirements for release Citations in a single day (24 hour period) can earn a Chesapeake Bay Grand Slam award.

STATE RECORD PROGRAM

The Virginia Saltwater Fishing Tournament maintains and certifies state records for more than 50 species of marine game fish commonly found in Virginia waters. Special "State Record" Citations are awarded to anglers who catch fish that are certified as new records.

Registering a fish for state record recognition is not complicated, but the requirements must be strictly followed. Potential state record fish must be weighed on the scales of an official weigh station of the Virginia Saltwater Fishing Tournament and all aspects of the catch must conform to the rules of the Tournament. In addition, the special state record application form must be filled out in its entirety and must be accompanied by a clear, side-view photograph of the fish. Finally, the actual fish must be preserved and viewed by a member of the Virginia Saltwater Fishing Tournament State Record Committee. Weigh stations and anglers should contact the Tournament Director or a member of the committee as soon as possible of potential record fish. These officials will assist in the weighing of the fish and the completion of the necessary paperwork. Each weigh station has a state record folder with complete information about state record requirements and a list of all members of the State Record Committee.

JUNIOR ANGLER PROGRAM

One of the most popular programs operated by the Tournament is the Junior Angler Awards Program. The program seeks to encourage youngsters to enjoy saltwater fishing and develop a conservation ethic by releasing fish alive.

Open to all children under the age of sixteen, this program challenges youths to catch and release six species of saltwater fish during the year. Participation in this program is free. There are no minimum size limits and almost all species of fish qualify.

Junior Angler Cards, with space for the participants to record their catches and releases, are available at most Tournament weigh stations and from the Tournament office. When a youth has completed the requirements and filled out the card, the card should be returned to the Tournament office and the Junior Angler Award will be shipped in a few weeks. Successful youngsters receive a handsome certificate, suitable for framing, signed by Virginia's governor along with a hat and decals featuring the program's logo.

INFORMATION

More information and brochures about the Virginia Saltwater Fishing Tournament, the State Record Program, the Junior Angler Awards and fishing opportunities and facilities in Virginia can be obtained from:

Virginia Saltwater Fishing Tournament 968 S. Oriole Drive Virginia Beach, VA 23451 (757) 491-5160 (757) 491-5172 (fax) mrcswt@visi.net (e-mail)

The Virginia Saltwater Fishing Tournament, Virginia State Record Program and all of the angling awards programs are a division of the Virginia Marine Resources Commission.



VIRGINIA GAME FISH TAGGING PROGRAM



agging fish (mark and recapture) is one of the primary methods fishery biologists use to gather information about the migration, movement and growth of fish.

This type of information is essential to understanding the life history and population status of

fish species, which, in turn, determines the need for manage-

ment measures to protect fish. With the increasing effort directed toward improving

marine fish stocks, this knowledge is an important key to properly managing finfish.

The Virginia Game Fish

Tagging Program (VGFTP) was implemented in 1995 to provide

recreational fishermen an opportunity to assist in these conservation and management efforts. This was achieved in several ways: 1) by having recreational fishermen assist in a quality-oriented tagging program; 2) by promoting catch-and-release fishing; 3) by educating anglers about proper fish handling and release techniques to reduce release mortality; and, 4) by fostering a conservation ethic which challenges saltwater fishermen to work for the protection of their resources.

PROGRAM DESCRIPTION

The VGFTP is a tightly focused tagging effort. The program is open to the public, but

participants are limited in number. Prospective participants, including program veterans, are required to sign-up on a "first come, first served" basis during an annual registration period. Then, prospects must attend a workshop to receive training in fish tagging, proper handling of fish, and the specific goals and operation of the VGFTP. This ensures the quality of the tagging efforts of program volunteers.

Specific species of fish are targeted, which allows the program to address specific infor-

mational gaps that exist and to focus efforts on recreationally important fish not targeted

by other tagging programs. Program participants are issued both large and small tags, so they may use a tag that is suited to the size of the fish. T-bar tags, which are bested suited for small fish (under 24 inches), are the primary tag type used by program participants. Participants also are issued small and large dart tags for use with larger fish.

Instruction in the proper insertion and seating for both tag types is emphasized during training sessions.

The result is a large group of trained volunteers on the water all year. They provide a cost effective means to run a continuous tagging effort for recreationally important fish and a mechanism to take advantage of special situations which may develop, such as an exceptionally strong spawn and recruitment by a particular species in a year or exceptionally large concentrations of fish in a specific area. Since they are already trained and fully equipped, large

of fish in a specific area. Since they are already trained and fully equipped, large numbers of a species can be tagged by simply alerting the participants to target that species.

When on the water, be alert to the possibility that any fish you catch may possess a tag, and remember that tags come in many different sizes, shapes, styles and colors.

GREATER AMBERJACK

VGFTP volunteers have tagged more than 34,000 fish, with more than 3300 of these fish recaptured. The information generated has assisted in the fisheries management process for several species of fish. Particularly valuable information has been generated for tautog, small red drum, speckled trout, flounder and cobia.

PROGRAM AWARDS

Recreational fishermen participating in the VGFTP earn conservation certificates by tagging a minimum of 25 fish during the year. In addition, recognition is provided to the top taggers in each of the targeted species and the tagger with the overall largest number of fish tagged and largest number of tagged fish recaptured during the year.

Fishermen who contact the VGFTP with information about tagged fish they have recaptured are awarded baseball caps and decals featuring the logo of the Virginia Game Fish Tagging Program, or, for certain species, pewter pins featuring the species caught.

HOW TO PARTICIPATE

The VGFTP is open to the public, although the number of participants is limited. Program registration occurs in December, which enables recreational fishermen to sign up to participate for the following year. A maximum number of participants will be enlisted with approximately equal numbers coming from four geographic areas: 1) Eastern Shore; 2) Tidewater; 3) Peninsula; and 4) Middle Peninsula/Northern Neck. Anglers are selected for participation on a "first-come, first served" basis in each region. Once the maximum number of participants from a specific region is reached, additional participants from that region will be accepted only if other regions do not fill there allocation of participants.

Program participants are required to attend a workshop on tagging, fish handling techniques, and the specific goals and operation of the VGFTP. This is a fundamental element of the program, which emphasizes the quality of its tagging efforts. Four workshops are held annually during February or early March, one in each of the four program regions. Workshops, which run approximately 2-3 hours in length, are held on weekday evenings. Tagging kits, measuring boards and complete instructions are provided at no charge to volunteers attending the workshops.

Recreational fishermen interested in participation should contact:

Virginia Saltwater Fishing Tournament 968 S. Oriole Drive Virginia Beach, VA 23451 (757) 491-5160 (757) 491-5172 (fax) mrcswt@visi.net (e-mail)

PROGRAM SPONSORSHIP

The VGFTP is a cooperative effort of the Virginia Marine Resources Commission, through the Virginia Saltwater Fishing Tournament, and the Virginia Institute of Marine Science, through the Sea Grant Marine Advisory Program. Funding is provided by Virginia's marine recreational fishing license.

OTHER TAGGING PROGRAMS

There are many tagging programs operating along the East Coast. Some of these programs utilize anglers in the tagging of fish, while others involve fisheries managers and members of the scientific community. In Virginia, both the Virginia Marine Resources Commission and the Virginia Institute of Marine Science operate tagging programs for specific species of fish.

The ultimate goal of these tagging programs is to learn more about the targeted species of fish, so better conservation and fisheries management programs can be developed. When on the water, be alert to the possibility that any fish you catch may possess a tag, and remember that tags come in many different sizes, shapes, styles and colors. When you catch a tagged fish contact the organization listed on the tag to report your catch.



TAGGING PROGRAMS YOU MAY ASSIST

Boat/US Clean Water Trust

880 S. Pickett St. Alexandria, VA 22304 (703) 823-9550

Tagging efforts target amberjack, bluefish, cobia, mackerel, grouper, red drum, sea trout, snapper, striped bass, tautog, and tarpon; operates in cooperation with National Marine Fisheries Service.

Cooperative Game Fish Tagging Program

National Marine Fisheries Service Southeast Fisheries Center 75 Virginia Beach Drive Miami, FL 33149 (305) 361-4253

Tagging efforts target tuna, billfish, and king mackerel.

Cooperative Shark Tagging Program

National Marine Fisheries Service Narragansett Laboratory South Ferry Road Narragansett, RI 02882 (401) 782-3320

Tagging efforts target all species of sharks except smooth and spiny dogfish.

The Billfish Foundation

2051 NW 11th Street Miami, FL 33125 (305) 649-8930

Tagging efforts target all species of billfish; works closely with National Marine Fisheries Service; developed a new billfish tag.

American Littoral Society

Sandy Hook Highlands, NJ 07732 (201) 291-0055

Tagging efforts target all marine finfish species; membership organization; data goes to National Marine Fisheries Service.

Virginia Game Fish Tagging Program

968 S. Oriole Drive Virginia Beach, VA 23451 (757) 491-5160

Tagging efforts target red drum, black drum, cobia, tautog, speckled trout, flounder, black sea bass, sheepshead and spadefish. Participants must register with program during annual sign-up period and participate in a training session; awards conservation certificates for top taggers. Cooperative effort of Virginia Institute of Marine Science and Virginia Marine Resources Commission.

WHAT TO DO WHEN YOU CATCH A TAGGED FISH

- 1. The most important information on a tag is the tag number. This is the key to identifying the fish, making it critical the exact tag number is recorded.
- 2. If you plan on releasing the fish and want to leave the tag in the fish, write down the correct tag number immediately. The value of a tagged fish is greatly enhanced if it is recaptured two or more times, providing a "road map" of its movements over a period of time. If you do not have the means (pen and paper) to write down the tag number and plan to released the fish, remove (cut off) the tag and keep it. Do not depend upon your memory to remember the tag number; an error in remembering even one digit of a tag number will render the recapture of the tagged fish worthless. If it is legal to keep the fish and you decide to keep it, remove the tag for reporting purposes.
- 3. Measure and record the total and fork length of the fish. If you do not have a measuring device, estimate the length of the fish. Also, measure or estimate the weight of the fish.
- 4. Record the species of fish, date of the catch, and exact location of the catch. Record any other information about the fish which might be important, for example, any

- wounds, unusual markings, or observations about the condition of the tag and place on the body of the fish where the tag was located.
- 5. Contact the office of the tagging program issuing the tag and supply them with this information. The telephone number of the tagging program issuing the tag will appear on the tag. If the tag was issued by the Virginia Game Fish Tagging Program, if you have a problem reading the tag and determining the proper agency to contact regarding a recapture, or if you need any help reporting the capture of a tagged fish, contact:

Virginia Game Fish Tagging Program c/o Virginia Saltwater Fishing Tournament 968 S. Oriole Drive Virginia Beach, VA 23451 (757) 491-5160

6. When you report the recapture of a tagged fish, you will receive information about the fish (when and where it was tagged; size when it was tagged). If the tag was issued by the Virginia Game Fish Tagging Program, you will receive a cap and decal featuring the program's logo, or, for certain species of fish, a pewter pin featuring the fish you caught.



HANDLING AND RELEASING FISH PROPERLY

Participation in recreational fishing is motivated by many different desires and goals, including catching fish, catching trophy-size fish, enjoying outdoor activities on the water, participating in special activities (tournaments, tagging programs, children's fishing and educational clinics, and many others), and being with friends and family in pleasing surroundings. Increasingly, catch and release fishing is becoming a part of recreational fishing as regulations require the release of certain sizes and species of fish, and recreational fishermen derive pleasure from seeing healthy fish return to the water. The importance of the social, environmental and educational motivations for releasing fish is growing among recreational fishermen, as they realize their role as stewards of fishery resources and enjoy their contribution. Learning the proper ways to release fish is an important part of this process.

1. **Plan Ahead.** Be prepared to release fish before you leave the dock or venture out on the beach or a pier. Use tackle that is strong enough to land fish quickly, minimizing the stress they endure and to prevent exhaustion. Set hooks quickly to minimize the opportunity for fish to swallow hooks. When practical, use barbless hooks and bend down the barbs on hooks to make removing the hooks less damaging. Learn about circle hooks for fishing with bait, and use them; they dramatically reduce "gut-hooked" fish and may increase

the effectiveness of your fishing. Use artificial baits and avoid the use of treble hooks.

- 2. **Use the Right Equipment.** Have needlenose pliers, forceps and/or other tools for the removal of hooks from deeply hooked fish readily available. Remove hooks when they are embedded in the mouth, lips, or other hard parts of a fish's mouth or throat. When a fish is hooked deeply in a soft body part (stomach, for example), cut the line or leader as close to the hook or fish's mouth as possible and leave it. Never pull, jerk or rip a hook out of a fish; this will cause significant injuries to the fish.
- 3. **Minimize Handling.** Handle fish gently, but firmly to prevent them from excessive "flopping" around, which can cause injuries. Never handle a fish by its eyes or gills! Use a wet cotton towel or wet cotton gloves when handling small fish; this will minimize the loss of protective "slime" and protect their skin. Large fish are best released by leaving them in the water and removing the hook. If you bring a large fish on board, use a large landing net; never use a gaff.
 - 4. **The Right Release.** Return fish to the water carefully. Hold them upright, close to the water, and gently guide them into the water head first. A fish that is exhausted, unresponsive or stressed should be revived by moving it forward through the water until its gills are working vigorously and it is ready to swim away under its own power.

FISHES MANAGEMENT



irginia has jurisdiction and control over the harvesting of marine fish, including shellfish, that occur in the tidal waters inside the State's boundaries and extend-

ing into the Atlantic Ocean three nautical miles. Under certain circumstances Virginia exercises control over fish caught beyond the State's jurisdiction if they are landed in Virginia. Authority to manage fish caught beyond 3 nautical miles out to 200 nautical miles is vested with the

Federal government.

VIRGINIA FISH-ERY LAWS

Virginia's laws concerning marine fishing are found in Title 28.2 of the Code of Virginia. Laws are made and amended by the General Assembly and become effective after signature by the Governor.

Proposed laws, or amendments to existing laws, may be introduced only by a member of the General Assembly. Similarly, ballot referendums to make or amend laws, such as the one in Florida which banned most inshore netting, must be initiated in the General Assembly. Therefore, citizens interested in creating, rescinding or amending laws relating to marine fisheries must do so through bills introduced into the General Assembly by State senators or delegates.

Once a proposal is introduced as a bill, it is assigned to a committee of the House of Del-

egates or the Senate. The committee may hold hearings on the bill or consider it at one of their regular meetings. These events may offer an opportunity for citizens to voice their opinions concerning the bill.

Written communication is another avenue for citizens to express their opinions about a bill. Letters, telegrams, e-mails and facsimile transmissions should be addressed to a specific legislator, should reference a specific bill by its assigned number, and should be clear and concise in conveying the opinions and reasoning of the writers.

The Code of Virginia is found in most public libraries, and reprints of the portions of the Code dealing with marine resources can be obtained for a fee from the Marine Resources

Commission. The number of reprints is limited and are made available on a "first come, first served" basis. A list of State sen-

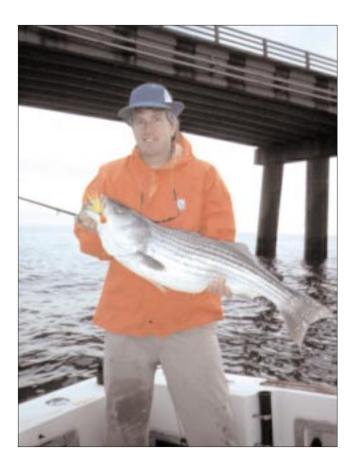
ators and delegates, including their committee assignments and office numbers, can be obtained from the Division of Legislative Services.

VIRGINIA FISH-ERY REGULATIONS

The Marine Resources Commission manages marine fisheries within Virginia's jurisdiction, pursuant to the power granted to it by the General Assembly. This includes the power to establish licenses, prepare management plans, and adopt regulations concerning the harvest of marine fish.

Regulations have the full force and effect of law, and violations are criminal misdemeanors. The power of the Commission to adopt regulations is broad, but it may not adopt any regulation which is in conflict with statutory law.

Regulations have the full force and effect of law, and violations are criminal misdemeanors.



The adoption or amending of regulations follows a precise procedure set forth in the Code of Virginia. Proposed regulations must be advertised for a minimum of 15 days, and at least one public hearing must be held prior to adoption. Advertisements are done in the daily newspapers in Richmond, Norfolk, and Newport News; often advertisements will appear in other newspapers in localities where a proposed regulation may have a significant impact. Notice of proposed regulatory actions also are posted on the Marine Resources Commission's website.

Citizens may voice their opinions about proposed regulations in person at public hearings or by written, fax or e-mail correspondence addressed to the Commissioner of Marine Resources. Usually, a public hearing will be held at the regularly scheduled meeting of the Marine Resources Commission at which a proposed regulation is scheduled for a vote. Other public hearings may be scheduled in localities where a proposed regulation may have a significant impact. The Marine Resources Commission meets monthly, normally on the 4th Tuesday of each month at its main office in Newport News, and the meetings are open to the public.

Citizens may not directly initiate a proposed regulatory action. Citizens should communicate their proposals for regulatory action to the Commissioner of Marine Resources for possible action.

The Marine Resources Commission uses several advisory committees in the formulation and review of regulatory actions. These committees are: The Finfish Management Advisory Committee, Blue Crab Fisheries Management Advisory Committee, Clam Fisheries Management Advisory Committee, and Shellfish Fisheries Management Advisory Committee; the Recreational Fishing Advisory Board; and the Commercial Advisory Committee. A list of the membership of these committees is available from the Marine Resources Commission.

Advisory committees are composed of citizens, appointed by the Commissioner of Marine Resources, who are knowledgeable and interested in various aspects of marine fisheries. Service on one of these committees is an excellent way to become involved in the fishery management process.

Regulations are deposited with the clerks of the circuit courts of all counties and cities in Tidewater Virginia, and copies can be obtained from the Registrar of Regulations at the Division of Legislative Services or from the Marine Resources Commission. Final regulations also are posted on the Commission's website.

POTOMAC RIVER REGULATIONS

Virginia and Maryland share fishery management authority in the Potomac River (excluding the tributaries) through the Potomac River Fisheries Commission. This Commission, which is composed of citizens from Virginia and Maryland appointed by their respective Governors, exercises complete control over marine fisheries, and its regulations have the full force and effect of law in the courts of both states.

Proposed regulations of the PRFC must be advertised in newspapers of general circulation in counties contiguous to the Potomac River in both states and sent to the clerks of court in those counties for posting. After advertising a proposed regulation, at least one public hearing must be held prior to adoption of the regulation. The PRFC holds meetings as required and announces its meetings in local newspapers. The meetings are always open to the public. Citizens may voice their opinions about proposed regulations in person at the public hearings or in writing to the Commission.

Copies of all current regulations and information about any scheduled meetings may be obtained from the Potomac River Fisheries Commission.

INTERSTATE FISHERIES MANAGEMENT

Many marine fish undertake extensive coastal migrations, passing through the waters of several states. Since the harvest



of fish in one State can affect the conservation of the species and the harvest in other States, coordinated management of fish among all coastal states is desirable.

Interstate management of fish is accomplished through the Atlantic States Marine Fisheries Commission (ASMFC). This body was created by an interstate compact in 1942 which joined all of the Atlantic coast States and Pennsylvania together to develop coastwide fishery management plans. Each member State is represented by its chief marine fisheries officer, a member of its legislature, and a citizen appointed by its Governor.

The compact creating the ASMFC did not provide for the compliance or enforcement of the Commission's management initiatives. The Atlantic Striped Bass Conservation Act (1984) and the Atlantic Coastal Fisheries Cooperative Management Act (1993) provided for federal compliance sanctions for ASMFC management initiatives. States must comply with the management measures adopted by the

ASMFC, or they will be ruled in noncompliance and subject to a federally imposed moratorium on the harvest of the species under management. Compliance involves adopting and providing for enforcement of the ASMFC management initiatives by State law or regulation.

ASMFC fishery management plans are developed through a specific process involving several committees composed of scientists, citizens and fishery managers. A management board, technical committee, plan development team, stock assessment committee, and citizen advisory committee are involved in formulating every management plan. Public input is solicited during the plan development phase and at least four public hearings are held at appropriate sites along the East Coast on every proposed plan. Citizens wishing to voice an opinion about a specific management proposal may appear in person at a public hearing or provide written comments by mail, fax or e-mail to the ASMFC. All meetings of the ASMFC, its Interstate Fisheries Management Board, and the management boards for all species are open to the public.

Prior to implementation of a fishery management plan, and periodically after plan implementation, the stock status of the species involved is reviewed by the stock assessment committee. Compliance with the plan is reviewed annually by the technical committee and the management board.

Information about Commission meetings and operating rules, or fisheries management plans, may be obtained from the Atlantic States Marine Fisheries Commission.

FEDERAL FISHERIES MANAGEMENT

Fishery management in Federal waters (waters 3 – 200 miles off the Atlantic coast) is exercised by the Secretary of Commerce through the National Marine Fisheries Service and Regional Fishery Management Councils. The Regional Fishery Management Councils develop fishery management plans, which become federal law when adopted by the Secretary.

The federal waters off the Virginia coast are under the jurisdiction of the Mid-Atlantic Fishery Management Council, although both the New England and South Atlantic Councils have plans which affect Virginia fishermen. The Mid-Atlantic Council is composed of persons representing the states of Virginia, Maryland, Delaware, Pennsylvania, New Jersey, and New York and the Northeast Regional Director of the National Marine Fisheries Service.

The development and adoption of fishery management plans follows a specific process, starting when the Council proposes to develop a plan and holds scoping hearings to determine what is known about the fishery and possible management options. The process continues with council meetings, public hearings, review by the Secretary of Commerce, publishing in the Federal Register for further public comment, and formal



adoption (with or without modification) by the Secretary of Commerce. Monitoring committees review compliance with management plans annually, and stock assessment review committees periodically review stock status.

Citizens may express their opinions about federal fishery management proposals in a variety of ways. Comments may be made in person at public hearings or at Council meetings. Written comments may be sent to the Mid-Atlantic Fishery Management Council or may be filed

with the Secretary of Commerce during the comment period noted in the Federal Register.

The meetings of the Mid-Atlantic Council, and its various committees, are open to the public. Dates and locations of public hearings and meetings can be obtained from the Council. Copies of federal fishery management plans can be obtained from the Mid-Atlantic Council or the Northeast Regional Director of the National Marine Fisheries Service.

MARYLAND AND NORTH CAROLINA FISHERY REGULATIONS

North Carolina and Maryland control marine fisheries through laws and regulations. Fishermen should contact the fisheries agency for each state to obtain complete information on their respective laws, regulations and management processes.

REFERENCE MATERIALS

Fishermen wishing insight into fisheries management in general, with specific information on the federal management process, might refer to the following publication: Fisheries Management For Fishermen: A Manual for Helping Fishermen **Understand the Federal Management Process** by Richard K. Wallace, William Hosking and Stephen T. Szedlmayer, report number MASGP-94-012. This 50+ page report describes fisheries management in terms the average fisherman can readily understand. The report was published by the Auburn University Marine Extension & Research Center, 4170 Commanders Drive, Mobile, AL 36615, under a Saltonstall-Kennedy Act grant from the National Oceanic & Atmospheric Administration.

ECONOMIC IMPACT OF RECREATIONAL FISHING

Fisheries management is a complex process involving much more than simply preserving fish. By law management plans must be fair and equitable, must use the best scientific data available, and must consider economic, social and ecological factors while achieving their primary conservation goals.

Recreational fisheries data has not been considerable highly reliable in the past, but recent efforts have made a significant difference, Saltwater recreational fishing license monies have made two significant contributions in Virginia: 1) bolstering the catch and effort surveys used in the Marine Recreational Fisheries Statistics Survey, and 2) producing

a major report of the economic impact of recreational fishing.

The economic impact report, using 1994 and 1995 data, documented recreational fishing as a major industry for Virginia producing nearly one-half billion dollars in annual economic output and providing over 10,900 full-time jobs. This industry was the result of over 2.5 million fishing trips taken annually by over 555,000 saltwater fishermen. Approximately 36% of the anglers

were out-of-state visitors. The single species producing the most economic output was striped bass-almost 95 million dollars annually!

The full report, entitled "Saltwater Angling and Its Economic Importance to Virginia", was produced by James Kirkley and David Kerstetter in 1997 and copies are available from the Virginia Institute of Marine Science, P.O. Box 1346, Gloucester Point, VA 23062.

MANAGEMENT AGENCIES

Virginia Marine Resources Commission 2600 Washington Ave. Newport News, VA 23607 Phone: (757) 247-2200 Fax: (757) 247-8101 Website: www.state.va.us/mrc/

Virginia Division of Legislative Services
General Assembly Building
2nd Floor
910 Capitol Street
Richmond, VA 23219
Phone: (804) 786-3591
Website: www.leg1.state.va.us

Atlantic States Marine
Fisheries Commission
1444 Eye Street, NW
6th Floor
Washington, DC 20005
Phone: (202) 289-6400
Fax: (202) 289-6051
E-Mail: comments@asmfc.org
Website: www.asmfc.org/

Potomac River Fisheries Commission P.O. Box 9 222 Taylor Street Colonial Beach, VA 22443 Phone: (804) 224-7148, 1-800-266-3904 Fax: (804) 224-2712 Mid-Atlantic Fishery
Management Council
300 South New Street
Room 2115, Freear Federal Building
Dover, DE 19904
Phone: (302) 674-2331
Fax: (302) 674-5339
Website: www.mafmc.org

NOAA Fisheries
National Marine Fisheries Service
Northeast Region
One Blackburn Drive
Gloucester, MA 01930
Phone: (508) 281-9300

NOAA Fisheries
National Marine Fisheries Service
1315 East-West Highway
SSMC3
Silver Spring, MD 20910
Website: www.nmfs.noaa.gov

Maryland Department of Natural Resources
Tidewater Administration
Tawes State Office Building
Annapolis, MD 21401
Phone: (410) 974-3487
Website: www.dnr.state.md.us

North Carolina Department of Natural Resources & Community Development Division of Marine Fisheries P.O. Box 769 Morehead City, NC 28557 Phone: (919) 726-7021 Website: www.ncdmf.net



ENFORCEMENT AND THE VIRGINIA MARINE PATROL



he Virginia Marine Patrol (VMP), a division of the Marine Resources Commission, is charged with enforcing saltwater fisheries regulations in Virginia waters. The VMP

is the largest branch of the Commission, with more than 65 law enforcement officers and almost 80 full time employees.

An operations center maintains continuous

radio dispatch, which links with officers

stationed throughout the tidal areas of Virginia. Officers work on rotating shifts, providing for on the water enforcement coverage 24 hours

ENFORCEMENT ACTIVITIES

per day.

Although marine patrol officers have full police powers to enforce all of the criminal laws of the Commonwealth of Virginia, their mission targets enforcement of marine fishery and boating regulations.

The number and complexity of fishery management plans and regulations have increased substantially in recent years as fisheries managers attempt to halt the decline in abundance in many species of finfish and shellfish by managing their harvest. This has resulted in a dramatic increase in the number of summonses written for fishery violations.

The vast majority of the hours worked by the VMP is spent patrolling Virginia waters and the waterfront for marine fisheries violations. Fisheries enforcement activities generally fall into one of four distinct categories:

1. enforcement of fishery conservation laws and regulations applicable to commercial and recreational fishermen; these regulations include commercial quotas on harvest, minimum size limits, gear restrictions (such as net mesh size and crab pot cull ring requirements), closed seasons and areas, recreational possession limits, and all other regulations designed to protect living marine resources;

2. enforcement of licensing requirements for commercial and recreational fishermen;

3. enforcement of conservation regulations and licensing requirements for commercial buyers, processors and transporters of marine finfish and shellfish; and.

4. enforcement of the National Shellfish Sanitation Program and other state

regulations relating to taking and transporting of marine resources from polluted areas.

Patrol time also is expended enforcing boating safety requirements and boating operation and navigation rules. This activity ranges from checking boat operators for the proper safety equipment, such as personal floatation devices, lights, and signaling equipment, to writing summonses for negligent operation and operation while under the influence of alcohol or drugs.

COBIA

Search and rescue activities are a major responsibility of marine patrol officers.

Additionally, Virginia's marine patrol officers are deputy federal law enforcement officers with full authority in federal waters and relating to federal fisheries matters. This authority is derived from memoranda of understanding (MOUs) with National Marine Fisheries Service and the U.S. Fish & Wildlife Service.

The Lacev Act is a federal fisheries and wildlife enforcement law that significantly strengthens enforcement efforts involving the interstate transportation or commerce in illegally taken fish and wildlife. This act prohibits the importation, exportation, and interstate transportation, sale or purchase of fish or wildlife taken in violation of state, federal, Indian tribal or foreign laws. Violations of this act invoke stiff penalties, including the possibility of a felony conviction. The maximum penalty provided under the Lacey Act for a felony conviction is a five-year prison sentence and maximum fine of \$250,000 for an individual and \$500,000 for an organization. In addition, strict liability forfeiture of all fish or wildlife, vessels, vehicles, aircraft and other equipment used in violation of the Act is prescribed. Through its federal law enforcement authority, the Virginia Marine Patrol is actively pursuing Lacey Act violations and works closely with the U. S. Fish & Wildlife Service to enforce the provisions of this law.

SERVICE ACTIVITIES

When lives and property are in jeopardy on Virginia's tidal waters, the VMP is one of the first to respond. Search and rescue activities are a major responsibility of marine patrol officers.

Fortunately, most of the calls for assistance involve common problems, such as engine failure; but each year the VMP handles serious problems, including medical emergencies, boating accidents, and sinkings.

Two service activities have a direct relationship to the effectiveness of the enforcement activities of the VMP. First is the time marine patrol officers must spend in court testifying and prosecuting cases resulting from summonses written. Efficient and successful prosecution of violations is the only way to ensure good compliance with fishery management regulations. Second, is the time the marine patrol officers spend in public education and service. These activities range from appearances at local boating and fishing shows and events to manning a display at the Virginia State Fair. While these activities consume a small amount of time, they often produce significant rewards in garnering compliance with regulations, understanding of the mission and activities of the VMP, and gaining citizen assistance in reporting fishery violations or suspicious activity.



The need for assistance from anglers, boaters, commercial watermen, and other citizens in reporting fishery violations is essential for the protection of Virginia's marine resources. The VMP has approximately 65 officers to patrol Virginia's marine waters, which include 120 miles of ocean coastline, 300 miles of bayfront land, over 1300 miles of shoreline on the saltwater reaches of tidal rivers, and countless more miles of shoreline on the Eastern Shore seaside and along tidal creeks of the Eastern Shore bayside and the western shore tributary rivers. Estimates of the number of marine recreational fishermen range from 350,000 to 900,000, and approximately 3000 commercial fishermen operate in Virginia waters. Maintaining 24-hour-per-day coverage with officers working 8 hour shifts, requires each marine patrol officer cover a large area of water and monitor an enormous number of fishermen and boaters.

COOPERATIVE ENFORCEMENT EFFORTS

Fish are not constrained by the arbitrary political and jurisdictional boundaries which restrict the activities of law enforcement agencies. Marine fish move up and down the coast, and from inshore waters to offshore waters, often passing through the waters of several different political jurisdictions.

The VMP has a good working relationship with many law enforcement agencies, including those listed below:

The Virginia Department of Game & Inland Fisheries, which has primary jurisdiction over freshwater fishing activities. But, as marine fish cross the arbitrary boundary across the tributary rivers to the Chesapeake Bay, they enter "freshwater", and cooperative enforcement efforts are necessary.

The U. S. Coast Guard, which enforces fisheries regulations in federal waters. Many fish species migrate inshore and offshore seasonally, which makes joint enforcement efforts extremely productive.

The National Marine Fisheries Service, which also has enforcement agents for federal waters.

The U. S. Fish & Wildlife Service, which has enforcement agents working with anadramous fish (e.g. striped bass) and Lacey Act violations (transportation of protected wildlife across state lines).

Local Enforcement Agencies, such as local police and sheriff departments in localities near marine waters. They patrol marine waters within their jurisdiction and can provide considerable help to the VMP.

Cooperative enforcement efforts bolster the capabilities of all law enforcement agencies involved and provide much broader enforcement coverage for marine fisheries laws and regulations.

VIRGINIA MARINE PATROL

DIRECTORY OF MARINE RESOURCES COMMISSION OFFICES

Main Office:

Virginia Marine Resources Commission 2600 Washington Avenue Newport News, VA 23607-0756 (757) 247-2200

Law Enforcement Operations Center: Virginia Marine Resources Commission Operations Center 30 Jefferson Avenue Newport News, VA 23607 (757) 247-2265

Eastern Shore Law Enforcement Office: Virginia Marine Resource Commission Onley Law Enforcement Office P. O. Box 569 Onley, VA 23418 (757) 787-5829

Middle Area Law Enforcement Office: Virginia Marine Resources Commission Gloucester Law Enforcement Office Tidemill Professional Center Gloucester Point, VA 23062 (804) 642–2640 Northern Area Law Enforcement Office: Virginia Marine Resources Commission Heathsville Law Enforcement Office P.O. Box 117 Heathsville, VA 22473 (804) 580-2901

VIOLATIONS "HOTLINE"

The Virginia Marine Patrol maintains a 24 hour toll-free hotline number for reporting violations of fisheries regulations: 1-800-541-4646.

DIRECTORY OF ENFORCEMENT AGENCIES

U. S. Fish & Wildlife Service Office of Law Enforcement 5721 S. Laburnum Ave. Richmond, VA 23231 (804) 771-2883

Virginia Department of Game & Inland Fisheries
Office of Law Enforcement
4010 W. Broad Street
Richmond, VA 23230
(804) 367-1000



VIRGINIA'S SALTWATER RECREATIONAL FISHING LICENSE



eginning on January 1, 1993, anglers fishing in Virginia's portion of the Chesapeake Bay and its tidal, saltwater tributaries were required to obtain a saltwater

recreational fishing license.

money deposited in the fund, was created as a "non-reverting" account of the state budget. This means that fund revenues not spent during the state's fiscal year remain in the fund for expenditure in future years and do not revert to the state's general fund.

Expenditures are limited to programs to conserve and enhance fish species important to recreational fishermen, to improve recrea-

tional fishing opportunities (which includes building artificial reefs, access, and public education), to obtain data and conduct research for fisheries management, to create and restore habitat for species important to recreational fisher-

PURPOSE

The license was part of a package of legislation aimed at improving Virginia's marine fisheries, which was passed by the General Assembly in 1992. In addition to the license, the package included a two year delayed entry system for all commercial fisheries and a commercial harvesters license. The legislation also invested authority in the Marine Resources Commission

to limit entry in specific fisheries as needed. The package was designed to give the Marine Resources Commission both the regulatory authority and a source of funding to enhance marine fishery resources.

marine fishery resources. The saltwater recreation

The saltwater recreational license was designed to raise revenues to conserve and enhance fish species caught by recreational fishermen. The law creating the license specified that all license monies had to be deposited in a special fund called the Virginia Saltwater Recreational Fishing Development Fund. This fund, and all interest earned on

LICENSE FUND EXPENDITURES

enforcement.

men, and for law

king Mackerel

The license has raised approximately \$1.4 million annually for recreational fishing projects. A board of citizens representing the interests of the recreational fishery, called the Virginia Recreational Fishing Advisory Board, has been entrusted with the responsibility of reviewing and recommending proposals for expenditures from the Saltwater Recreational Fishing Development Fund. This board is appointed by the

Commissioner of the Marine Resources Commission. Their recommendations are approved by the Marine Resources Commission, which has final authority over all Fund expenditures.

The saltwater recreational license was designed to raise revenue to conserve and enhance fish species caught by recreational fishermen.

LICENSE FEES

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Resident Annual License	\$7.50
Resident 10-Day License	\$5.00
Nonresident Annual License	\$7.50
Nonresident 10-Day License	\$5.00

Private Boat License*

Annual License \$30.00

*This license covers all persons fishing on the private boat and it provides an individual license to the boat owner.

Lifetime Individual License

Up to and including age 44	250
Ages 45–50	
Ages 51–55	\$90
Ages 56-60	\$60
Ages 61-64	

Lifetime License for Disabled Person**

Lifetime License Fee \$5.00

**This license is available to any Virginia resident who is permanently and totally disabled upon proof of disability.

Charterboat License***

Charterboat License (6 passengers or less) \$150.00

Charterboat License

(7 passengers or more).....\$150.00, plus \$4 for each passenger over 6 for which boat is licensed.

***This license covers all passengers on a properly licensed charterboat.

Commercial Fishing Pier License****

Commercial Fishing Pier \$450.00

****This license covers all customers on a properly licensed commercial fishing pier.

Boat Rental Business License*****

Boat Rental Business (per boat fee) \$7.50 Maximum Fee \$500.00

*****This license covers all customers on properly licensed rental boats.

PERSONS WHO NEED A FISHING LICENSE

Anyone fishing with a rod and reel, handline, spear or gig in Virginia's portion of the Chesapeake Bay or in the saltwater, tidal tributaries of the Chesapeake Bay.

PERSONS WHO DO NOT NEED A FISHING LICENSE

- 1. Children under the age of 16,
- 2. Persons 65 years of age, or older.
- 3. Persons fishing on a private boat, if the boat has a valid Virginia saltwater fishing license covering all persons on board.
- 4. Customers fishing on a charterboat, headboat or rental boat, if the boat has a valid Virginia saltwater fishing license covering all customers on board.
- 5. Customers fishing on a commercial fishing pier, if the pier has a valid Virginia saltwater fishing license covering all customers on the pier.
- 6. Persons fishing in coastal and ocean waters outside of the easternmost boundary of the Chesapeake Bay.
- 7. Landowners, their spouses and children, and their non-paying guests when fishing from the landowner's private real property.
- 8. Organized groups of individuals with physical or mental limitations, veterans in veterans hospitals, and school groups (K-12), when such groups have written permission from the Commissioner of the Marine Resources Commission.
- 9. Persons holding a valid Maryland saltwater recreational fishing license, as long as the reciprocal licensing agreement continues between Maryland and Virginia.
- 10. Persons holding a valid Potomac River Fisheries Commission recreational saltwater fishing license, as long as the reciprocal licensing agreement continues between the PRFC and Virginia.
- 11. Persons fishing with commercial gear licensed by the Virginia Marine Resources Commission, including holders of commercial rod and reel licenses.



PROJECTS FUNDED WITH SALTWATER RECREATIONAL LICENSE FUNDS

I. Artificial Reefs

- 1. Occohannock Artificial Reef
- 2. Cape Charles Artificial Reef
- 3. Nassawadox Artificial Reef
- 4. Northern Neck Artificial Reef
- 5. Buoy Purchase & Placement for Artificial Reefs
- 6. Establish Deployment Fund for Artificial Reef Program
- 7. Digital Imagery of Virginia's Artificial Reefs
- 8. Support Vessel Funding for Artificial Reef Program
- 9. Assessment Study of Virginia's Artificial Reefs

II. Public Access

- 1. Currioman Public Landing
- 2. Dandy Point Boat Ramp, Hampton
- 3. Croaker Landing, York River-Dredging
- 4. Gloucester Point Fishing Pier
- 5. Harborton Landing
- 6. Jones Creek Boat Ramp
- 7. Kiptopeake State Park Boat Ramp
- 8. Lynnhaven Boat Ramp
- 9. Morley's Wharf Pier
- 10. Westmoreland State Park Pier Improvements
- 11. Saxis Fishing Pier

III. Enhancment of Recreational Fishing Opportunities and Public Education

- 1. Virginia Saltwater Fishing Tournament
- 2. Virginia Game Fish Tagging Program
- 3. Virginia Marine Anglers Guide
- 4. National Catch & Release Symposium-VA Beach
- 5. Hampton Roads Kids Fishing Program
- 6. Newport News Kids Fishing Program
- 7. VA Marine Science Museum Mobile Classroom
- 8. VA Marine Science Museum Interactive Fishing Exhibit
- 9. VA Marine Science Museum Interactive Fish Shapes Exhibit
- 10. VIMS Mini-School of Marine Science Program
- 11. James River Educational Program
- 12. Viking Hook-Up program at Huntington Middle School.

IV. Data Collection and Assessment

- 1. Economic Impact Study of Virginia's Saltwater Recreational Fishery
- 2. Marine Recreational Fisheries Statistical Survey Enhancement
- 3. Saltwater Licenseholder Database
- 4. Striped Bass Allocation Study
- 5. Monitor Recreationally Important Juvenile Fish

V. Fisheries Management Research

- 1. Striped Bass-Study of Feeding Habits
- 2. Striped Bass-Study of Skin Ulcers
- 3. Striped Bass Stock Assessment
- 4. Striped Bass Spawning Assessment
- 5. Shark Stock Assessment
- 6. Cobia Spawning and Assessment-Chesapeake Bay
- 7. Finfish Aging Laboratory
- 8. Spanish Mackerel-Genetic Analysis
- 9. Red Drum Spawning Research
- 10. Gray Trout (Weakfish) Stock Structure Study
- 11. American Shad Feeding Biology Study
- 12. American Shad Restoration
- 13. Tautog Fishing Mortality Study
- 14. Tautog Reproductive Biology Study
- 15. Tautog Hook and Release Mortality Study
- 16. Summer Flounder Stock Identification
- 17. Summer Flounder Hook and Release Mortality Study
- 18. Summer Flounder Mortality Comparison Circle & "J" Hooks
- 19. Spadefish Biology Study

VI. Habitat Research and Restoration

- 1. Seagrass Habitat Restoration
- 2. Oyster Reef Restoration
- 3. Effects of Haul Seine Gear on Seagrass

Note: Includes projects funded totally or in part with recreational saltwater fishing license funds.

SALTWATER FISHING-WHERE TO BEGIN



etting hooked on saltwater fishing is easy. The boil of a striped bass with its tail slapping the water as it takes a surface plug at the Chesapeake Bay Bridge-Tunnel or

the thrill of a white marlin catapulting from the indigo waters of the Gulf Stream have converted many skeptics into devotees.

many skeptics into devotees.

The journey from an enthusi-

astic novice to an accomplished saltwater angler can be daunting. Saltwater fish are not constrained by boundaries, often migrating substantial distances along the East Coast. Water temperature changes, photoperiod (length of light in the day), and the presence or absence of baitfish can trigger movements. Learning when to fish for different species is not an easy task.

The potential area to fish is huge. The Chesapeake Bay and coastal waters of the Atlantic Ocean off Virginia comprise well over 3000 square miles of fishing area within the reach of most boats. How to identify the productive areas to fish is the second challenge.

Then, the tackle, techniques and best baits must be determined. For people who did not have the luxury of growing up on the water, the time needed to learn by "trial and error" is not a viable option while balancing the demands of a career and family. Fortunately, other options exist.

JOIN A CLUB

One of the best roads to becoming a better saltwater fisherman is to join an angling club. There are more than a dozen angling organizations in the eastern portion of Virginia. Some clubs are organized around a single species of fish or type of fishing, while others encourage membership from a broad spectrum of anglers. Some organizations are primarily social in nature, favoring monthly meetings and intraclub

competitions, while others are involved mainly in fisheries management.

Clubs enable novice anglers to meet other fishermen, exchange ideas, develop friendships and find new fishing partners. Many clubs hold monthly meetings with the major portion of the meetings devoted to education. Usually, the educational segments of the meetings involve guest speakers, who describe techniques for catching certain species

of fish.

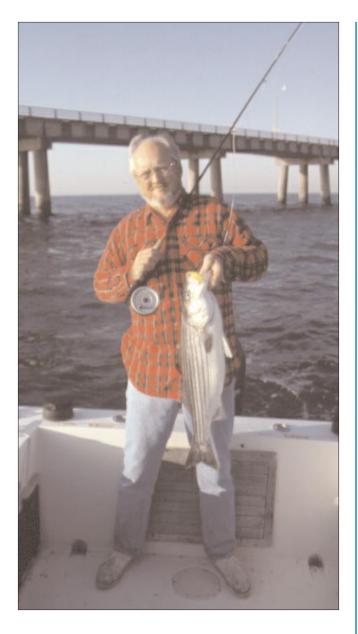
BONITO

Club meetings are almost always open to the public, so a potential member can attend before joining. Announcements of club meetings are usually carried in local newspapers in the outdoor news section.

GO TO SHOWS AND ATTEND SEMINARS

Boat shows, sportsman shows and outdoor expositions are a regular feature in eastern Virginia, particularly during the winter

The journey from an enthusiastic novice to an accomplished saltwater angler can be daunting. Learning when to fish for different species is not an easy task.



months. All of the shows have retail exhibits of boats and fishing tackle, and some feature seminars by local experts on various types of saltwater fishing. Usually, the only charge is for admission to the show; the seminars are free. Shows are extensively advertised in local newspapers and on radio.

Local angling experts, charterboat captains and guides, and outdoor writers occasionally hold saltwater fishing seminars. These may last a few hours or all day and may cover the ways to catch a single species of fish or a wide range of fish. Seminars which are not held in conjunction with boat or sportsman shows usually charge a registration fee. Seminars are often advertised with posters or flyers at tackle shops and marinas and are mentioned in the outdoor sections of local newspapers which feature a "calendar of upcoming events".

Also, many outdoor writers with local newspa-

pers will mention upcoming seminars in their columns.

GO TO SCHOOL

A few angling experts, charterboat captains and guides offer saltwater fishing classes. Normally, these will run for two or three hours one night a week for several consecutive weeks. Fishing classes charge a registration fee and often are limited in size. Information about upcoming classes can be found on posters and flyers at tackle shops and marinas and in the outdoor section of local newspapers which feature a "calendar of upcoming events". Also, many outdoor writers with local newspapers will mention upcoming classes in their columns.

CHARTER A BOAT OR HIRE A GUIDE

Charterboat captains and guides are professionals. They know the local waters, keep up with new fishing techniques, and know what fish are available and where to catch them. Many professional skippers and top local anglers have gotten their starts by working as mates on charterboats during the summer months.

A good way to learn the basic angling techniques for catching certain species of fish is to charter a boat or hire a guide to take you fishing. For example, if you want to learn how to catch marlin, tuna, and dolphin, charter a boat for an offshore fishing trip out of Rudee Inlet in Virginia Beach or Wachapreague on the Eastern Shore. Pay attention to how the mate rigs the baits, prepares the terminal tackle and how the baits are fished. Most mates and charterboat skippers do not mind answering your questions, but do not expect them to spend the day teaching you how to fish or to give away their favorite fishing locations. The best way to approach the day is to be observant.

Many top saltwater anglers charter boats on a regular basis. Sometimes they want to pursue a type of fishing their boats and equipment are not prepared to handle or they just want to enjoy a day of fishing, without the hassles of preparing baits and tackle, navigating a boat, and cleaning up after the trip is over. Most charterboats welcome experienced anglers and are willing

to allow them a greater role in the fishing experience. Of course, this should be discussed with the captain prior to leaving the dock.

More than 200 charterboats and headboats operate in Virginia waters, and they pursue every type of fish that visits local waters. A list of charterboats can be found in the Virginia Saltwater Fishing Guide, which is available from the Virginia Saltwater Fishing Tournament, 968 S. Oriole Drive, Virginia Beach, VA 23451, (757) 491-5160.

MAGAZINES, BOOKS, TELEVISION SHOWS AND VIDEOS

No matter what the subject matter, from finding an exotic vacation spot where you can catch tarpon and billfish to learning how to catch tautog in the Chesapeake Bay, there is probably a publication or video which covers the topic. In fact, the variety of media publications covering outdoor activities is so large, finding the ones which meet a particular person's needs can be a challenge.

Publications and videos can be evaluated according to several criteria. First, what is the subject matter targeted by the publication. Some publications cover a wide range of outdoor activities, such as fishing, hunting, camping, and hiking, while others target a single activity, such as fishing. Publications may further limit their coverage to a more specific activity, such as saltwater fishing, surf fishing or even fishing for a single species of fish.

A second measure of a publication or video is its scope of coverage. Is the focus of the coverage local, regional, national or even international.

Finally, anglers should consider the type of coverage offered by a publication or video. Some publications focus on "how-to" information, while others relate stories and create action and adventure tales. Some focus on destinations and travel information, while others focus on the evaluation of equipment. Of course, there are publications and videos which combine all of these themes in their offerings.

Publications and videos can be found in numerous places, but the best places to start are local tackle shops, outdoor shops and marinas. They routinely stock these types of products, and they are most likely to carry publications and videos focusing on local fishing opportunities.

Authors and publishers often attend local boat shows and outdoor shows, which gives anglers the opportunity to peruse the product and talk with the author or publisher.

Libraries, book stores and retail stores with outdoor product sections are a good source for outdoor publications and videos.

INTERNET

Increasingly, the internet is becoming a source of fishing information. Individuals, groups and clubs, tackle shops, charterboat captains, and outdoor publications are maintaining websites providing a wealth of fishing information. Many also feature "noteboards", where anglers can ask specific questions and receive answers from the hosting organization and other users of the website. Information available covers a wide range of topics, including local fishing reports, knot



tying, satellite surface water temperature information, conservation issues, weather and, of course, when, where, and how to catch various species of fish.

RECORD FISH

Some members of the angling public become interested in the pursuit of large fish, resulting in the need to identify recognized records for various species of fish. The official keeper of world saltwater records is the International Game Fish Association. They have been establishing and promoting equipment and angling regulations and practices in a highly successful effort to provide uniform rules for world record catches since 1939. Complete information about the world record program is available from:

International Game Fish Association 300 Gulf Stream Way Dania Beach, FL 33004 (954) 927-2628 (954) 924-4299 (fax) IGFAHQ@aol.com (e-mail) www.igfa.org (website)

State records are maintianed by the agency or commission charged with managing an individual state's marine fisheries. In Virginia state records fall under the jurisdiction of the Marine Resources Commission through the Virginia Saltwater Fishing Tournament.

VIRGINIA ANGLING CLUBS and ORGANIZATIONS

P. O. Box 415 Accomac, VA 23301

Eastern Shore Marlin Club P. O. Box 144 Nassawadox, VA 23413

Great Bridge Fishermen's Association 1007 N. Battlefield Blvd. Chesapeake, VA 23320

Northampton County Anglers Club P. O. Box 721 Eastville, VA 23347

> Peninsula Saltwater Sportfishing Association P. O. Box 5194 Newport News, VA 23605

Portsmouth Anglers Club P. O. Box 7842 Portsmouth, VA 23707

Tidewater Anglers Club P. O. Box 8157 Norfolk, VA 23503

Virginia Anglers Club P. O. Box 31494 Richmond, VA 23294

Virginia Beach Anglers Club P. O. Box 8602 Virginia Beach, VA 23452

Virginia Beach Billfish Foundation P.O. Box 6395 Virginia Beach, VA 23456-6395

Virginia Beach Sand Witches P. O. Box 62342 Virginia Beach, VA 23462

Middle Peninsula Fly Rodders P. O. Box 665 North, VA 23128

Virginia Coastal Fly Anglers P. O. Box 2866 Virginia Beach, VA 23450 Virginia Charterboat Association P. O. Box 38 Wicomico Church, VA 22579

Coastal Conservation Association State Office 2100 Marina Shore Dr. Suite 108 Virginia Beach, VA 23451 (757) 481-1226

Coastal Conservation Association Central Chapter 10699 Courtney Rd. Glen Allen, VA 23060

Coastal Conservation Association Eastern Shore Chapter 7514 Wellington Neck Rd. Franktown, VA 23354

Coastal Conservation Association Fredericksburg Chapter 608 Wiliam St. Fredericksburg, VA 22401

Coastal Conservation Association Northern Virginia Chapter 13228 Poet Ct. Fairfax, VA 22033

Coastal Conservation Association Peninsula Chapter 729 Thimble Shoals Blvd. Suite 5-C Newport News, VA 23606

Coastal Conservation Association Piedmont Chapter 3942 Deep Woods Dr. Earlysville, VA 22936

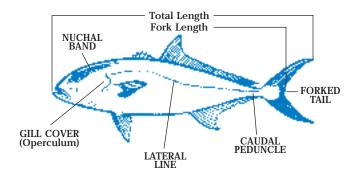
Coastal Conservation Association Southwestern Virginia Chapter 7031 Mt. Chestnut Rd. Roanoke, VA 24018

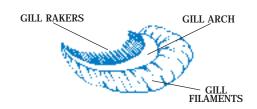
Coastal Conservation Association Tidewater Chapter 1613 Dylan Dr. Virginia Beach, VA 23464



FISH IDENTIFICATION GUIDE









Anal Fin - The fin on the bottom of fish located between the anal vent (hole) and the tail.

Barbels - Slender strands extending from the chins of some fish (often appearing similar to whiskers) which perform a sensory function.

Caudal Fin - The tail fin of fish.

Caudal Peduncle - The narrow portion of a fish's body immediately in front of the tail.

Demersal Fish - Fish that live on the bottom.

Dorsal Fin - The fin running down the back of fish. The dorsal fin is often divided into two distinct portions: the first or spinous dorsal fin, which is closest to the head of the fish and often contains hard spines; and the second dorsal fin.

Finlets - The series of small fins situated behind the dorsal and anal fins on some species of fish.

Forked Tail - A caudal fin marked by the extension of the top and bottom portions of the fin substantially further from the caudal peduncle area than the center portion of the fin.

Fork Length - The measurement of a fish's length from the tip of the nose to the inside of the fork in the tail.

Fusiform - Fish shape marked by being tapered at both ends, such as the members of the tuna family.

Gill Arch - The white bony structure supporting the gills of fish.

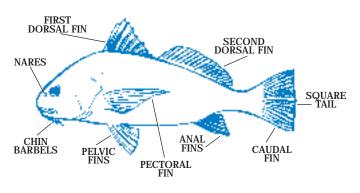
Gill Cover - The exterior gill cover, also known as the operculum.

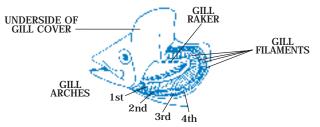
Gillrakers - The white bony projections coming from the gill arch.

Incisor Teeth - Front teeth sharpened to form a cutting edge.

Keel - A ridge or projection, often present on caudal peduncle.

Lateral Line - The sensory organ with the appearance of a line which runs lengthwise down each side of a fish.





Lunate - curved or shaped like a crescent.

Molars - Rear teeth flattened for use in grinding or crushing.

Nuchal Band - A dark band extending from behind or near the eye of a fish across the back of the neck toward the first dorsal fin.

Ocellated Spot - A dark spot encircled by a band of another, lighter color; a spot with the appearance of being surrounded by a halo.

Operculum - The exterior gill cover.

Otoliths - The bony structures, generally spherical in shape, found in the inner ear of fish; also called ear stones.

Pectoral Fins - The fins appearing on each side of the fish immediately behind the gill opening.

Pelagic Fish - Fish that live or are associated with open ocean waters.

Pelvic Fins - Pair of fins located on the underside of fish below and slightly rearward of pectoral fins.

Peritoneum - The lining of the stomach cavity.

Pharyngeal Teeth - The set of grinding or mashing teeth or plates found in the throat of some fish, such as red drum

Scute - A hard plate, often sharp, found in the caudal peduncle area on some fish.

Spiracle - An air or breathing hole.

Square Tail - A caudal fin generally equal in length from top to bottom.

Striated - Marked or appearing to be marked with grooves, furrows or ridges.

Swim Bladder - A sac or pouch of tissue which is used by fish to maintain a neutral or certain level of buoyancy.

Total Length - The measurement of a fish's length from the tip of the nose to the tip of the tail.

Underslung Jaw - A mouth located on the under side of the head, slightly rearward of nose, which opens downward; also known as an inferior jaw.

RED DRUM

(Channel Bass, Redfish, Puppy Drum, Spottail Bass) Sciaenops ocellatus

Description: copper to bronze colored back, fading to a white belly; may be more silvery in appearance in clear or ocean waters; one to several ocellated spots occur at the base of the tail; caudal fin is slightly lunate and pectoral fin is rounded; large scales and underslung jaw.

Similar Fish: closely related and similar in appearance to Black Drum; distinguishable by lack of chin barbels (which are present on black

drum), rounded shape of pectoral fin, ocellated spot or spots at base of tail, slightly lunate caudal fin, and generally more streamlined body shape.

Size: up to 100 pounds; average size is 10 – 50 pounds; small fish, called puppy drum, are found in river estuaries, bays, and coastal waters and range from 8 – 20 inches in length.

BLACK DRUM

Pogonias cromis

Description: bronze, copper or grayish back, fading to a light colored belly; occassionally has a more silvery appearance; color fades after death to a grayish or grayish-green hue; high arched back gives most fish a "humpback" shape; 10 to 14 pairs of barbels are prominent under chin; caudal fin is square and pectoral fin comes to a pronounced point; juvenile fish (generally under 15 pounds) display 4 to 6 dark vertical bars, which fade in adults.

Similar Fish: closely related and similar in appearance to Red Drum; distinguishable by absence of ocellated spot or spots at the base of the tail (which are present on red drum), the presence of chin barbels, pointed pectoral fin,



square caudal fin and "humpback" body shape. Juveniles are similar in appearance to sheepshead, which have 5 to 6 vertical bars on their sides; however, sheepshead lack chin barbels, have a significantly forked tail, a fully connected first and second dorsal fin (in black drum the first dorsal fin is distinct from second dorsal fin), and prominent teeth, which are absent in black drum.

Size: up to 120 pounds; average size is 20 – 70 pounds; occasionally, juvenile fish in the 6 – 16 inch range are common in Chesapeake Bay and estuarine waters.

ATLANTIC CROAKER

(Croaker, Hardhead) Micropogonias undulatus

Description: silvery color overall with a white belly; often has a faint bronze or golden cast, with yellowish fins; back often has small brassy spots, that align into wavy lines down the fish's sides; underslung jaw features 3 to 5 pairs of barbels under the chin; caudal fin is convex in shape; gill cover is hard and sharp.



Similar Fish: Spot

Size: up to 6 pounds; average size is 6-12 inches ($\frac{1}{2}$ lb. -2 lbs.)

SPOT

(Norfolk Spot, Yellowbelly) Leiostomus xanthurus

Description: silvery color overall with a white belly; a prominent black spot is present behind the gill cover and above the base of the pectoral fin; several wavy lines, brassy in color, extend down the back; caudal fin is slightly concave; larger individuals in the late summer often exhibit a distinct yellow coloration on their bellies.



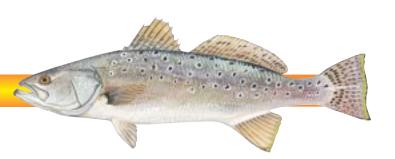
Similar Fish: Atlantic Croaker

Size: up to $2\frac{1}{2}$ pounds; average size is 5 - 10 inches (under a pound).

SPOTTED SEATROUT

(Speckled Trout, Spotted Trout, Speckle) Cynoscion nebulosus

Description: grayish silver back (often with a bluish, iridescent tint) fading to silver sides with a white belly; distinct round black dots are present on back and sides, and they extend onto second part of the dorsal fin and the caudal fin; body is long and slender; upper jaw possesses two large canine teeth.



Similar Fish: closely related and similar in appearance to the Weakfish or Gray Trout; distinguishable by the black dots which extend onto second dorsal fin and caudal fin (gray trout lack any black markings on these fins).

Size: up to 17 pounds; average size is $1\frac{1}{2} - 4$ pounds.

WEAKFISH

(Gray Trout, Yellowfin Trout, Squeteague, Tiderunner) Cynoscion regalis

Description: silvery body and sides with some olive shading along the top of the back; numerous dark blotches appear on the back and the sides, some of which may appear to align and form wavy lines; fins are a uniform dusky color, some of which may have a yellowish margin; body is long and slender; upper jaw possesses two large canine teeth.



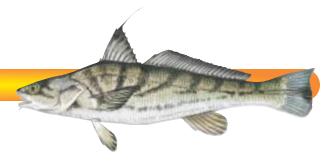
Similar Fish: closely related and similar in appearance to the Spotted Seatrout; distinguishable by the dorsal and caudal fins which are a uniform dusky coloration without any markings (spotted seatrout have black dots on these fins).

Size: up to 20 pounds; average size ranges from $\frac{1}{2}$ – 8 pounds.

NORTHERN KINGFISH

(Roundhead, Sea Mullet, Whiting, King Whiting, Virginia Mullet) Menticirrhus saxatilis

Description: long, slender body is dark in coloration; the top of the back tends to be dark fading to grayish sides; 5 or 6 dark bars occur on the back of this fish; fins are dusky, often with a blackish tinge or tip and the first dorsal fin posesses a long, soft spine; underslung mouth features a single barbel under the chin.



Similar Fish: closely related and similar in appearance to the Southern Kingfish; distinguishable by the darker coloration and long spine on first dorsal fin.

Size: up to 3 pounds; average size ranges from $\frac{1}{2} - 1$ pound.

SOUTHERN KINGFISH

(Roundhead, Sea Mullet, Whiting, King Whiting, Virginia Mullet) Menticirrhus americanus

Description: long, slender body is grayish-silver on the sides; 6 to 8 very faint dusky bars may be present along the back and sides; fins are dusky in color; underslung mouth features a single barbel under the chin.



Similar Fish: closely related and similar in appearance to Northern Kingfish; distinguishable by lighter coloration and absence of long spine on first dorsal fin.

Size: up to 3 pounds; average size ranges from $\frac{1}{2} - 1$ pound.

SILVER PERCH

(Perch, Sand Perch) Bairdiella chrysoura

Description: small member of the drum family with bright silvery coloration fading to a white belly; fish from estuarine waters that are not clear may have a slightly darkish coloration along the top of the back; easily distinguishable from other members of the drum family by lack of chin barbels and mouth that is not underslung.



Similar Species: White Perch; distinguishable by lighter, silvery coloration and lack of spines in dorsal fin (white perch have sharp spines in first dorsal fin).

Size: under 1 pound; average size ranges from 4 – 7 inches.

STRIPED BASS

(Rockfish, Striper) Morone saxatilis

Description: overall coloration is silvery with a white belly; back tends to be a dark, olive or dusky brownish color; 7 or 8 pronounced black stripes run horizontally down the back and sides of the fish; the spines in the first dorsal fin are stiff and the gill cover is hard and sharp.

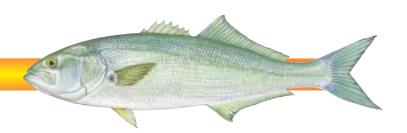


Size: up to 125 pounds; average size ranges from 4 – 15 pounds.

BLUEFISH

(Blue, Chopper, Snapper, Tailor Blue) Pomatomus saltatrix

Description: long body is bluish green in coloration, fading to a light colored belly; tail is sharply forked and the mouth features razor sharp teeth.



Similar Fish: Pollock and several species of jacks are somewhat similar in appearance to bluefish, but all lack the formidable set of teeth prominent in bluefish.

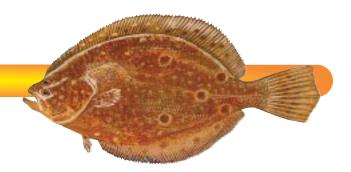
Size: up to $31\frac{3}{4}$ pounds; average size is 1-15 pounds.

SUMMER FLOUNDER

(Flounder, Fluke) Paralichthys dentatus

Description: rounded, flat body is brown on one side (the left side) and white on the other side; both eyes appear on the brown (left) side of the fish; caudal fin is convex and the mouth features sharp, cone-like teeth; summer flounder feature five ocellated spots on their brown side, three tending to form a triangle just above the base of the tail.

Similar Fish: closely related and similar in appearance to the Southern Flounder; distinguishable by the presence of ocellated spots on the back of the summer flounder (southern flounder



may have blotches and/or spots but lack the conspicuous ocellated spots found on summer flounder); Gulf Flounder, which are not common north of Cape Hatteras, are similar in appearance, but feature only three ocellated spots – one above the lateral line, one below it and one touching it, and these spots may become indistinct in larger fish.

Size: up to 20 pounds; average size is $\frac{1}{2}$ – 5 pounds.

COBIA

(Bonito, Ling, Crabeater,) Rachycentron canadum

Description: large, long fish which is dark, chocolate brown on the back and sides fading to a white belly; juveniles often display a brown back with a white horizontal stripe, a very dark stripe and a second white stripe down the sides; the tail is deeply forked and the first dorsal fin is absent (replaced by 7 to 9 short spines) but they feature a pronounced second dorsal fin; the lower jaw protrudes past the upper jaw.



Similar Fish: None, although cobia often swim at the surface with second dorsal fin sticking out of the water, causing many people to mistake them for sharks. Juvenile cobia are similar in appearance to remoras, but lack the large suction pad on the top of the head of remoras.

Size: up to 135 pounds; average size ranges from 10 – 50 pounds.

TAUTOG

(Blackfish, Chub, 'Tog, White Chin,) Tautoga onitis

Description: a thick-bodied fish characterized by thick lips, blunt snout, and large, irregular teeth (incisors in front, molars in the rear); coloration is varied from a chocolate brown, to gray or a blackish olive on the back and sides with a white belly; some fish have irregular blotches on the side, but this mottling pattern, often associated with spawning activity, is not present in all individuals; males have a more blunt head, a more pronounced white chin, and a distinct white spot on their side.



Similar Fish: closely related to and similar in appearance to the Cunner; distinguishable by lack of scales on the gill cover (cunner have scales on their gill covers) and by size (cunner rarely achieve weights of 1 pound).

Size: up to 25 pounds; average size ranges from 1 – 6 pounds.

BLACK SEA BASS

(Sea Bass, Black Will) Centropristis striata

Description: coloration is black to a very dark brown on the back and sides; the belly and fins also tend to be dark in color; females have a uniformly curved slope from the top of the back to the head, while large males have a pronounced hump forward of the dorsal fin; individual fish may exhibit a pronounced iridescent aquamarine to bluish coloration with some highlights of red in the area forward and below the dorsal fin, behind



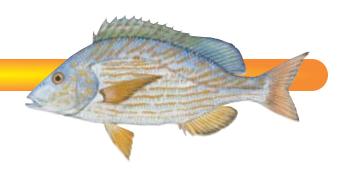
the head and especially on males on and around the hump, which may be associated with spawning activity; a long filament extends from the upper part of the caudal fin.

Size: up to 10 pounds; average size ranges from $\frac{1}{2}$ – 3 pounds.

PIGFISH

(Hogfish) Orthopristis chrysoptera

Description: coloration is grayish along the back fading to silver along the sides and a silvery white belly; brassy to bronze mottled marks are scattered over much of the body; fins tend to be a dull golden color; the first dorsal fin has distinct spines; the name derives from the grunting noise these fish make when removed from the water.



Similar Fish: Pinfish.

Size: up to 2 pounds; average size is $\frac{1}{2} - 1$ pound.

SCUP

(Porgy, Silver Porgy) Stenotomus chrysops

Description: a deep bodied fish that is grayish to grayish brown along the back and sides, fading to a light gray belly; dorsal fin has pronounced spines and the mouth has distinct incisor and molar teeth; pectoral fin is pointed and relatively long for the size of the fish.



Similar Fish: Longspine Porgy and several porgies prevalent on reefs in the southern Atlantic.

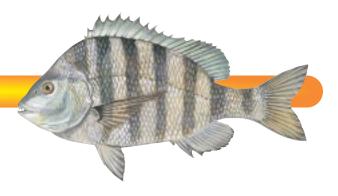
Size: up to 4 pounds; average size ranges from $1 - 1\frac{1}{2}$ pounds.

SHEEPSHEAD

(Convict Fish) Archosargus probatocephalus

Description: a deep bodied fish that is grayish in color along the back and sides with a belly that is only slightly lighter in color; 5 to 6 black (or very dark brown) bars run down the sides; mouth is filled with formidable incisor and molar teeth; pectoral fin is long and pointed.

Similar Fish: Similar in body shape and size to several porgies; most similar in appearance to small black drum, but easily distinguishable by single dorsal fin structure (black drum have separate first and second dorsal fins), mouth with in-



cisor and molar teeth (black drum lack substantial teeth in their mouth, having crushing plates, called pharyngeal teeth, deep in their throat) and absence of chin barbels (black drum have pronounced chin barbels).

Size: up to 20 pounds; average size ranges from 2 – 8 pounds.

SPADEFISH

Chaetodipterus faber

Description: deep bodied fish with pointed second dorsal and anal fins, which give the fish an almost triangular shape; coloration is silvery gray with 4 to 6 prominent black bars running down the sides; juveniles are very dark in color; the mouth is noticeably small relative to the overall size of the fish and lacks teeth.



Size: up to 15 pounds; average size ranges from 1 – 6 pounds.

GRAY TRIGGERFISH

(Triggerfish) Balistes capriscus

Description: deep bodied fish with a large first spine in the first dorsal fin; grayish overall in color, some individuals may show some darker mottling; mouth features pronounced lips and large teeth; body is covered with tough skin.

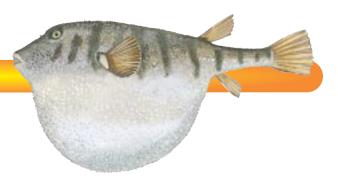


Size: up to 12 pounds; average size 1 – 5 pounds.

NORTHERN PUFFER

(Blow Toad, Blowfish, Swell Toad) Sphoeroides maculatus

Description: blunt, "boxlike" body shape, which can rapidly be altered by swelling of the belly with air or water into a spherical shape; mouth features large, "rabbitlike" incisor teeth; coloration is light brownish on the back and sides with a white belly; several dark vertical bars run down the sides; fins have a yellowish or yellowish orange tinge; skin is tough and coarse, similar to sandpaper.



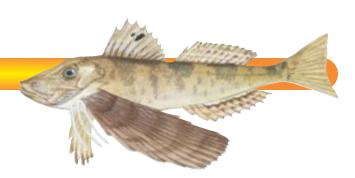
Similar Fish: Southern Puffer (rare north of Florida); Smooth Puffer, which has a very smooth skin and attains a larger size; Burrfish, which have pronounced spines protruding from the skin.

Size: up to 2 pounds; average size is under a pound.

NORTHERN SEA ROBIN

(Sea Robin) Prionotus carolinus

Description: long, tapered body follows a broad head featuring a tough, bony covering with numerous spines; large, rounded pectoral fins can spread out to form "wings"; at the base of each pectoral fin are 3 to 4 feelers, which are sensory organs the fish use to "walk" along the bottom and feel for various forage items; color is brownish with hints of orange along the back, fading to a grayish brown along the sides, and



a white belly; fins have a brownish orange or brownish yellow hue.

Size: up to 4 pounds; average size is less than 1 pound.

OYSTER TOADFISH

(Toadfish, Mud Toad, Oyster Toad) Opsanus tau

Description: the oyster toadfish will not win any beauty contests; this species features a broad, flat head with a large mouth and plenty of small teeth; the body is tapered and the skin is slimy and lacks scales; bony protrusions and spines are



present at the rear of the head; coloration is yellowish brown with some hints of orange.

Size: up to 6 pounds; average size ranges from $\frac{1}{2}$ – 2 pounds.

LIZARDFISH

Synodus foetens

Description: a long, slender fish with a body that is almost cylindrical in shape; the head is pointed and the mouth is large and full of sharp teeth; the skin looks similar to the skin on a reptile, but scales are present; coloration is brown to grayish brown, with a white belly.



HOUNDFISH

Tylosurus crocodilus

Description: a very long, slender fish with a cylindrically shaped body and a bony head with long, bony jaws armed with sharp teeth; the dorsal fin is located well toward the rear of the body; coloration is greenish to bluish green along the back fading to silvery or silvery green sides and belly.

Similar Fish: closely related and similar in appearance to Atlantic Needlefish; distinguish

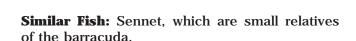
able by much larger average size of houndfish (Atlantic needlefish rarely exceed 1 pound in local waters), the presence of a silvery horizontal stripe on Atlantic needlefish (absent on houndfish), and the presence of a caudal peduncle with a keel on the houndfish (no keel on caudal peduncle of Atlantic needlefish).

Size: up to 10 pounds; average size 3 - 6 pounds.

GREAT BARRACUDA

(Barracuda) Sphyraena barracuda

Description: a long, slender fish with a pointed snout and a large mouth full of sharp teeth; coloration is silver with a green or grayish green back; several black or dark spots may occur on the sides toward the tail of the fish.



Size: up to 60 pounds; average size ranges from 7 – 20 pounds.

TARPON

(Silver King) Megalops atlanticus

Description: a long fish featuring a single dorsal fin with a long trailing filament, a large mouth with a protruding lower jaw, large scales, and deeply forked tail; occasionally, they are said to look like an overgrown herring; coloration is silver, although the back may be greenish gray or bluish gray.

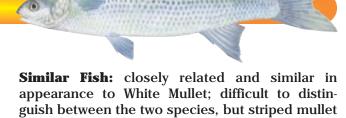


Size: up to 230 pounds; average size is 35 – 90 pounds.

STRIPED MULLET

(Mullet, Jumping Mullet) Mugil cephalus

Description: long, cylindrically shaped fish featuring a small mouth and two distinct dorsal fins; body covered with relatively large scales and hard spines are present in first dorsal fin; coloration is greenish, bluish green or bluish gray along the back fading to silvery sides and a silvery white belly; may have faint, dark stripes down the back.



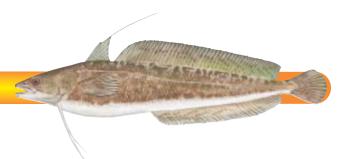
has 8 rays or soft spines in the anal fin (white mullet have 9 rays).

Size: up to 6 pounds; average size is under 2 pounds.

RED HAKE

(Ling Cod) Urophycis chuss

Description: long, tapered body shape featuring a short first dorsal fin with an elongated filament and a long second dorsal fin; a single chin barbel is present; caudal fin is rounded; coloration is brownish to grayish brown, with some hints of red, along the back and upper sides fading to a vellowish, off-white belly.



Size: up to 9 pounds; average size is under 2 pounds.

POLLOCK

Pollachius virens

Description: long, tapered body features a head with a pointed snout, a plump midsection on most fish and a tapered rear; three distinct dorsal fins, a chin barbel and a forked caudal fin highlight the fin structure; coloration is bluish green to olive green along the back fading to a gray or greenish silver along the sides and a silvery belly.

Similar Fish: similar in color and shape to a bluefish; distinguisable by absence of teeth (bluefish are armed with sharp teeth), presence of three distinct dorsal fins (bluefish has two dorsal fins)



and presence of a chin barbel (none on bluefish). Also, closely related to and similar in body shape and fin structure to Atlantic cod, but distinguishable by much more prominent chin barbel on cod and coloration (cod have many color phases and tend to exhibit much more color including brown and reddish or dark spots along the back and sides).

Size: up to 35 pounds, average size is 1 - 6 pounds.

BUTTERFISH

Peprilus tricanthus

Description: round or oval shaped body featuring a head with a blunt snout and a small mouth; fin structure is highlighted by a deeply forked caudal fin, no first dorsal fin, which is replaced with 3 or 4 spines, and a long second dorsal fin; coloration pale blue to bluish green along the back fading to a silvery belly.



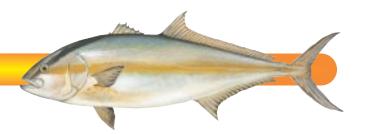
Size: up to 1 pound; average size is smaller.

GREATER AMBERJACK

(Amberjack) Seriola dumerili

Description: large, streamlined fish with a deeply forked, crescent shaped tail, caudal peduncle features a keel without scutes (which are hard, bony projections), a short, rounded pectoral fin and a dark nuchal band (stripe) running from the first dorsal fin through the eye; coloration is olive to dark amber on the back, fading to silvery sides and a white belly, although the overall color has a light yellow or amber tinge.

Similar Fish: Almaco Jack, Banded Rudderfish, Lesser Amberjack. Differentiation of these species is tricky. Banded rudderfish are a very small jack with six prominent dark bars, running down their sides (juvenile amberjack have similar bars, but the bars fade and disappear in larger



amberjack). Amberjack have 7 spines in their first dorsal fin, 30 – 34 dorsal rays in their second dorsal fin and 11 – 19 gillrakers; banded rudderfish have 8 dorsal spines in their first dorsal fin, 34 – 39 dorsal rays in their second dorsal fin, and 12 – 16 gillrakers. Almaco jacks have 7 dorsal spines in their first dorsal fin, 28 – 31 dorsal rays in their second dorsal fin, and 21 – 26 gillrakers. Lesser amberjack have 8 dorsal spines in their first dorsal fin, 29 – 32 dorsal rays in their second dorsal fin, and 21 – 24 gillrakers.

Size: up to 130 pounds; average size ranges from 30 – 60 pounds.

BANDED RUDDERFISH

Seriola zonata

Description: small jack similar in body shape to the amberjack (streamlined with a deeply forked, crescent shaped tail, caudual peduncle has a keel without scutes, a short, rounded pectoral fin and a dark nuchal band); coloration is olive to dark amber on the back fading to silvery sides, although the fish has an overall light yellow or amber tinge; 6 prominent dark (often dark olive color) bars run down the sides of this fish.



Similar Fish: Greater Amberjack, Almaco Jack, Pilotfish; To differentiate among species, see Great Amberjack.

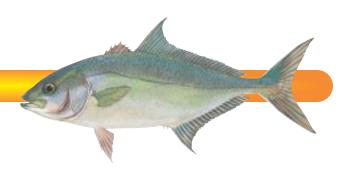
Size: up to 10 pounds; average size ranges from $\frac{1}{2}$ – 2 pounds.

ALMACO JACK

Seriola rivoliana

Description: streamlined fish with a deeply forked, crescent shaped tail, a caudal peduncle with a keel but no scutes, a short rounded pectoral fin, and a dark nuchal band; coloration is olive to bluish green to dark amber on the back, fading on the sides with a light colored belly; overall coloration has a light bluish green or olivaceous tinge.

Similar Fish: Amberjack and Banded Rudderfish; overall body shape is shorter and wider, and sec-



ond dorsal and anal fins tend to be higher in relation to body width than in other species; also, caudal fin, while distinctively forked, is less crescent shaped than other species; to differentiate among species, see Greater Amberjack.

Size: up to 55 pounds; average size ranges from 8 – 25 pounds.

CREVALLE JACK

(Hardtail) Caranx hippos

Description: streamlined shape with a tapered body, although the head is relatively blunt (high forehead); deeply forked, crescent shaped tail, pointed, sickle shaped pectoral fin, and caudal peduncle keel with scutes (scutes are hard and very sharp, often inflicting severe cuts on anglers handling the fish by the tail); coloration is greenish gold along the back fading to a silver or yellowish silver sides and a yellow belly; a black spot is pre-



sent on the gill cover and another black spot is present at the base of the pectoral fin.

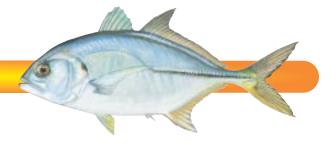
Similar Fish: Blue Runner, Bar Jack, Horse Eye Jack

Size: up to 55 pounds; average size ranges from 3 – 20 pounds.

BLUE RUNNER

Caranx crysos

Description: streamlined shape, similar in most respects to crevalle jack, but lacking the blunt head; deeply forked, crescent shaped tail, pointed, sickle shaped pectoral fin and caudal peduncle keel with scutes are present; coloration is bluish green along the back, silvery sides with a silvery belly with shades or hints of yellow; a dark spot is present on gill cover and tips of caudal fin feature dark spots, but lacks the dark spot at the



base of pectoral fin which is present on crevalle jacks.

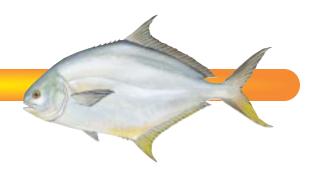
Similar Fish: Crevalle Jack, Bar Jack, Horse Eye Jack

Size: up to 5 pounds; average size is approximately 1 pound.

POMPANO

(Florida Pompano) Trachinotus carolinus

Description: rounded, flattened body with a small, underslung mouth; deeply forked tail and a small pectoral fin; coloration is greenish gray with some yellowish hints along the back fading to silver sides and a silvery yellow belly.

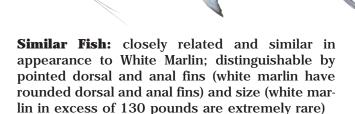


Size: up to 7 pounds; average size ranges from $\frac{1}{2}$ – 2 pounds.

BLUE MARLIN

Makaira nigricans

Description: the largest Atlantic billfish, with an elongated body colored dark blue or cobalt blue on top fading to a silvery white belly; may have some golden hues when the fish is alive, especially where the bluish back fades to silvery, and several pale vertical bars may be present down the sides; first part of dorsal fin and the anal fin are pointed.



Size: up to 1500 pounds; average size ranges from 200 – 500 pounds.

WHITE MARLIN

Tetrapturus albidus

Description: elongated body colored dark blue or cobalt blue on top fading to silvery white belly; first part of dorsal fin is rounded and features small black or dark spots; anal fin is rounded.

Similar Fish: closely related and similar in appearance to Blue Marlin; distinguishable by

rounded first part of dorsal fin (which also features spots) and rounded anal fin (dorsal and anal fins of blue marlin are pointed).

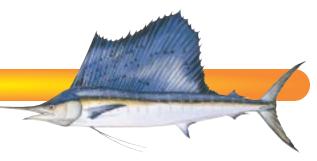
Size: up to 180 pounds; average size ranges from 40 – 70 pounds.



SAILFISH

Istiophorus platypterus

Description: elongated body features a greatly enlarged dorsal fin, like a sail, from which the fish derives its name; coloration is dark blue or cobalt blue on top fading to silvery white belly; the large dorsal fin features numerous small, dark spots.



Similar Fish: White Marlin, Blue Marlin, Longbill Spearfish.

Size: up to 125 pounds; average size ranges from 30 – 60 pounds.

LONGBILL SPEARFISH

Tetrapturus pfluegeri

Description: a relatively small fish, whose elongated body features an elongated dorsal fin; coloration is dark blue or cobalt blue on top fading to silvery white belly.



Size: up to 75 pounds; average size ranges from 20 – 35 pounds.

DOLPHIN

(Dolphinfish, Mahi-Mahi) Coryphaena hippurus

Description: colorful fish tending to show a bluish green or turquoise top, fading to greenish sides fading to a yellowish belly; small bluish green dots can be found over entire body; body is elongated and tapers sharply from the head to the tail; males feature a very blunt forehead, while females exhibit a rounded forehead; caudal fin is deeply forked.



Similar Fish: Pompano Dolphin.

Size: up to 85 pounds, average size ranges from 2 – 15 pounds.

WAHOO

Acanthocybium solanderi

Description: a long, slender fish with a pointed snout and mouthful of sharp teeth; gills lack the white "teeth" or protrusions called gillrakers; coloration is dark blue or cobalt blue on top, fading to pale blue sides and a silvery blue belly; dark, verticle bands are present along the sides, similar to the stripes on a tiger.

Similar Fish: King Mackerel; distinguishable by the lack of gillrakers, a first dorsal fin which is longer and much fuller, and a caudal fin which is decidedly more upright (much less pronounced fork).

Size: up to 150 pounds; average size ranges from 20 – 35 pounds.

KING MACKEREL

(Kingfish, King) Scomberomorous cavalla

Description: a long, slender fish with a deeply forked tail, caudal peduncle keel and a mouthful of sharp teeth; coloration is bluish green, bluish gray, or dark gray on the top fading to silvery sides and belly; fins are a uniform, dusky color.

Similar Fish: closely related and similar in appearance to Spanish Mackerel, particularly in juvenile king mackerel which have bronze spots on their sides which fade in adult fish; distinguishable from Spanish mackerel by 1) dusky coloration of first dorsal fin (Spanish mackerel have a jet black forward portion of first dorsal fin; 2)

lateral line which makes a pronounced dip at the start of the second dorsal fin (Spanish mackerel have a lateral line that dips gradually and relatively evenly from the head to the tail;) 3) 6 – 10 gillrakers on each gill arch (Spanish mackerel have 11 – 16 gillrakers on each gill arch); 4) spots on juvenile king mackerel are a dull bronze color (on Spanish mackerel the spots are a bright golden color).

Size: up to 90 pounds; average size is 7 - 25 pounds.



Scomberomorous maculatus

Description: a slender fish with a deeply forked tail, caudal peduncle keel, and a mouthful of sharp teeth; coloration is green or greenish blue on top fading to silver sides and belly; a large number of irregular bright golden spots adorn the sides; front portion of first dorsal fin is jet black in color.

Similar Fish: closely related and similar in appearance to Cero Mackerel and King Mackerel; distinguishable from cero mackerel by the alignment and shape of golden spots on the sides (Spanish mackerel have irregular spots round in



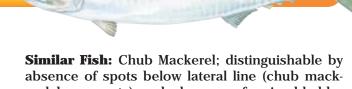
shape; cero mackerel have spots which are long and thin (elongated), close together and are aligned so if they were connected they would form lines running down the sides; also cero mackerel have a single golden line running down each side); cero mackerel are extremely rare north of southern Florida; see king mackerel to differentiate between king and Spanish mackerel.

Size: up to 13 pounds; average size ranges from 1 – 3 pounds.

ATLANTIC MACKEREL

(Boston Mackerel) Scomber scombrus

Description: small fish favoring cold water; coloration is dark green along the back fading to a silvery belly; dark wavy lines run from the top to midway down the sides; does not have a swim bladder.



erel have spots) and absence of swim bladder (chub mackerel have a swim bladder).

Size: up to 5 pounds; average size is 1 - 2 pounds.

LITTLE TUNNY

(False Albacore) Euthynnus alletteratus

Description: streamlined body shape tapering from head to tail; small finlets are present between dorsal and anal fins and the upright tail (caudal fin); coloration is dark greenish or dark greenish blue along the top and upper sides fading to silvery below; wavy stripes are present on the rear portion of the back (above the lateral line) and several dark spots appear below the base of the pectoral fin; caudal peduncle keel is present.



Similar Fish: Atlantic Bonito and Skipjack Tuna; distinguishable by location and placement of stripes on body.

Size: up to 35 pounds; average size ranges from 10 - 15 pounds.

ATLANTIC BONITO

(Bonito, Bonito Mackerel)Sarda sarda

Description: streamlined body shape tapering from head to tail; small finlets are present between dorsal and anal fins and the caudal fin; coloration is dark blue on top and upper sides fading to a silvery belly; several straight stripes run along the back tilted upward as they run from behind the head to the top of the back; caudal peduncle keel is present.



Similar Fish: Little Tunny and Skipjack Tuna; distinguishable by location and placement of stripes on body. Atlantic bonito have noticeable teeth, which are not as conspicuous in little tunny and skipjack tuna.

Size: up to 20 pounds; average size ranges from 4 - 8 pounds.

SKIPJACK TUNA

(Oceanic Bonito, Skippy) Euthynnus pelamis

Description: streamlined body shape tapering from head to tail; small finlets are present between dorsal and anal fins and the caudal fin; coloration is dark blue to bluish black on the top fading to silvery on the belly; 4 to 6 horizontal stripes run along the lower sides and belly; caudal peduncle keel is present.



Similar Fish: Little Tunny and Atlantic Bonito; distinguishable by location and placement of stripes on body.

Size: up to 40 pounds; average size ranges from 5 – 15 pounds.



(Horse Mackerel) Thunnus thynnus

Description: streamlined body tapering from head to tail; small finlets, usually tinged yellow, are present between dorsal and anal fins and the caudal fin; pectoral fin is short; coloration is dark blue to nearly black on top, fading along the sides with a white belly; often several series of small, very light-colored spots are present on the belly.

Similar Fish: closely related and similar in appearance to Yellowfin Tuna and Bigeye Tuna; distinguishable from both species by 1) short pectoral fin, which does not extend rearward on its



body to the start of the second dorsal fin (pectoral fin extends at least this far on both yellowfin and bigeye tuna), and 2) the gillrakers on first gill arch (bluefin tuna have 34 – 43 gillrakers on arch, while yellowfins have 27 – 33 gillrakers and bigeyes have 25 – 29 gillrakers).

Size: up to 1400 pounds; average size ranges from 30 - 150 pounds.

YELLOWFIN TUNA

(Allison Tuna) Thunnus albacares

Description: streamlined body tapering from head to tail; finlets, colored yellow, are present between dorsal and anal fins and the caudal fin; second dorsal and anal fin tend to be elongated (particularly on larger fish) and are colored yellow; pectoral fin is long, extending past the start of the second dorsal fin; coloration is dark blue on the top, fading along the sides with golden or yellow highlights to a light colored belly.

Similar Fish: closely related and similar in appearance to Bluefin Tuna and Bigeye Tuna; distinguishable from both species by 1) length of pectoral fin, which extends rearward past start of second dorsal fin (pectoral fin on bluefin tuna does not extend to start of second dorsal fin, while on bigeye tuna it extends just to the start of second dorsal fin); and,



2) its liver, which has a smooth surface on all sides and is not symmetrical in shape (both bluefin and bigeye tuna have livers which are striated on one side, which is caused by blood vessels just under the surface of the liver, and are symmetrically shaped); distinguishable from bluefin tuna by number of gillrakers on first gill arch (yellowfin tuna have 27 – 33 gillrakers on gill arch, while bluefin tuna have 34 – 43 gillrakers); often, the very similar appearance of bigeye and yellowfin tuna necessitates examination of the liver for a positive identification.

Size: up to 385 pounds; average size ranges from 30 - 80 pounds.

BIGEYE TUNA

Thunnus obesus

Description: streamlined body tapers from head to tail; finlets, which are yellow tinged by black, are present between dorsal and anal fins and the caudal fin; dorsal and anal fins tend to be yellow in color; pectoral fin is long, extending rearward just to the start of the second dorsal fin; coloration is dark blue on top fading along the sides to a white belly; first gill arch has 25 – 29 gillrakers; eye is larger relative to the size of the head than for either bluefin or yellowfin tuna.



Similar Fish: closely related and similar in appearance to Bluefin Tuna and Yellowfin Tuna; see descriptions of Bluefin Tuna and Yellowfin Tuna for distinguishing characteristics.

Size: up to 375 pounds; average size ranges from 100 – 250 pounds.

ALBACORE

Thunnus alalunga

Description: streamlined body tapers from head to tail; finlets, dusky in coloration, are present between dorsal and anal fins and the caudal fin; pectoral fin is extremely long, extending past the start of the anal fin; coloration is dark blue on top fading to a silvery white sides and belly; first dorsal fin is yellow.



Similar Fish: similar to other tunas, but easily distinguishable by extremely long pectoral fins.

Size: up to 90 pounds; average size 25 - 45 pounds.

COWNOSE RAY

(Bat Ray, Bullfish) Rhinoptera bonasus

Description: broad, flat body is formed by winglike pectoral fins; long, whiplike tail features a barbed spine at the base of the tail; front of the head has an indentation in the middle giving it a similar appearance to a cow's nose, which gives rise to its name; coloration is brown or brownish with a mustard yellow tint on the back with a white or off-white belly. **Similar Fish:** other rays are somewhat similiar but the distinctive shape of the head easily distinguishes the cownose from other rays.

Size: up to 70 pounds; average size ranges from 20 – 40 pounds.

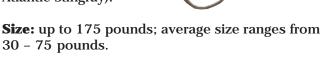
SOUTHERN STINGRAY

(Stingray) Dasyatis americana

Description: broad, diamond-shaped body is formed by winglike pectoral fins and a pointed head; long, whiplike tail features a barbed spine near the base of the tail; coloration is brown to grayish brown on the back with a white or offwhite belly.

Similar Fish: closely related and very similar in appearance to the Atlantic stingray; distinguishable by pointed sides or wings (Atlantic stingray

has rounded sides or wings) and placement of barbed spine (more forward on southern stingray, closer to the end of the tail on the Atlantic stingray).



SMOOTH BUTTERFLY RAY

Gymnura micrura

Description: broad, diamond-shaped body, which is much wider than it is long, is formed by winglike pectoral fins and a pointed head; short tail has no spine; coloration is mustard yellow to brownish on the back with an off-white belly.

Similar Fish: closely related and similar in appearance to the spiny butterfly ray; distinguish

able by lack of barbed spine on tail (spiny butterfly ray has a barbed spine).

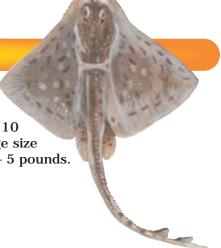
Size: up to 150 pounds; average size ranges from 25 – 70 pounds.

CLEARNOSE SKATE

(Skate) Raja eglanteria

Description: broad diamond-shaped body with a pronounced pointed snout which is almost translucent; long tail features numerous spines (none barbed) running along the back and down the tail; coloration is brown or grayish brown along the back with numerous darker spots and some light spots; belly is white.

Size: up to 10 pounds; average size ranges from 2 - 5 pounds.



SPINY DOGFISH

Sqalus acanthias

Description: long, slender body with two dorsal fins of nearly equal size; pelvic fin on the underside of the fish is positioned between the two dorsal fins and anal fin is absent; jaw is filled with small teeth with points bent toward rear of the mouth, positioned closely together to form a continuous cutting edge; a spiracle (airhole) is positioned behind the relatively large eye; coloration is gray along the back fading to pale gray with a white belly; young spiny dogfish have numerous white spots along the back.

Similar Fish: closely related and similar in appearance to the smooth dogfish; distinguishable by lack of anal fin (smooth dogfish has an anal fin) and the presence of spines at the start of

each dorsal fin (smooth dogfish lack spines). Also, spiny dogfish may appear similar to Atlantic sharpnose sharks, which have small white spots along the back. However, the two species are easily distinguishable by size of dorsal fins (spiny dogfish have fins nearly equal in size, while the sharpnose shark has a first dorsal fin substantially larger than the second); presence of an anal fin on sharpnose shark (none on spiny dogfish); presence of spines at start of dorsal fins on spiny dogfish (none on sharpnose shark), and presence of distinct individual teeth in sharpnose shark.

Size: up to 30 pounds, average size 5 - 15 pounds.

SMOOTH DOGFISH

Mustelus canis

Description: long slender body with two dorsal fins of nearly equal size; pelvic fin on underside of fish is positioned between two dorsal fins, while anal fin is rear of the second dorsal fin; jaw features flat, pavement-like teeth and a spiracle (airhole) is located behind the relatively small eye; coloration is gray to brownish along the back fading to a pale gray along the sides with a white belly.

Similar Fish: closely related and similar in appearance to the spiny dogfish; distinguishable by presence of anal fin (absent in spiny dogfish) and absence of spines at the start of dorsal fins (present in spiny dogfish).

Size: up to 40 pounds; average size is 10 - 20 pounds.

SANDBAR SHARK

(Brown Shark, Sand Shark) Carcharhinus milberti

Description: long slender body with large first dorsal fin and small second dorsal fin; distinctive ridge exists along top of back between the first and second dorsal fins; height of first dorsal fin exceeds 10% of shark's total length and first dorsal fin extends farther forward on the body than on similar sharks; coloration is gray to grayish brown along the back and sides fading to a lighter colored abdomen.

Similar Sharks: Dusky shark; distinguishable by larger size of first dorsal fin (dusky's first dorsal fin height is smaller than 10% of its total body length) and location of first dorsal fin (dusky shark's first dorsal fin starts at or rearward of the connection of the pectoral fins to the body).

Size: up to 350 pounds; average size is 10 – 50 pounds.

Note: Chesapeake Bay is the largest nursery area in the world for sandbar sharks, and small specimens (10-25 pounds) are extremely abundant during the summer months. People often refer to the sand shark, which is not a true species of shark but is a generic reference to any small toothy shark, and most likely they are referring to the sandbar shark in local waters. Identification of the shark species is extremely difficult, often relying on comparisons of fin lengths or placement. A good guide for shark identification is **Angler's Guide to Sharks of the Northeastern United States**, by John G. Casey. This was a publication of the Department of the Interior, Bureau of Sport Fisheries and Wildlife, Circular Number 179.

